THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XVII. No. 420—20th YEAR.] LONDON, NOVEMBER 24, 1868. [Subscription per Ann. { 15s. in Advance / 18s. Credit.] Price 6d. Unstamped.

RAMSAY'S NEWCASTLE CANNEL
COAL. Analysis by Dr. FYFE, M.D.:—
9746 cubic feet of gas per ton of coal.
26-candle gas.
13¼ cwt. coke per ton of coal.
N.B.—Ramsay's Cannel most resembles the Marquis of Lothian's Cannel, but superior as to coke.
RAMSAY'S PATENT CONDENSED COKE,
DO. GARESFIELD COKE.

RAMSAY'S FIRE-CLAY ARTICLES.
GAS-RETORTS, introduced 1828.
FIRE-BRICK WORKS, established 1804.
FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire Clay.
The Fire Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article.
The FIRE-BRICKS (marked "RAMSAY") are to be seen in all parts of the world, and the works are the most extensive in the Kingdom.
Manufactories: DERWENTHAUGH, SWALWELL, and HEBBURN QUAY. Offices: BROAD CHARE, NEWCASTLE-UPON-TYNE. Address, G. H. RAMSAY.

GEORGE GLOVER & CO.,
Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.
These Meters are warranted to measure correctly and not to vary, and have come into general use more rapidly than any Meters hitherto manufactured.
1862.
CLASSES X. AND XXXI.
CLASS X.—"*For ingenuity, completeness, and efficiency of apparatus used in measuring gas, and for excellence of material and workmanship.*"
CLASS XXXI.—"*For superiority of construction and workmanship.*"
Particulars and lists of prices forwarded on application to Ranelagh Works, Ranelagh Road, Pimlico, LONDON, S.W.; 15, Market Street, MANCHESTER; or 127, Boulevard de Magenta, PARIS.

IMPROVED GASLIGHT.
Ample experience has proved that, by carburetting common gas, its illuminating power may be doubled or even tripled, and its consumpt greatly lessened. WAX candles and oil lamps in consequence are being rapidly superseded, and gas is now used in many private houses and mansions where formerly it was not tolerated.
Information as to the apparatus, fluids, &c., may be had of GEO. GLOVER and Co., or CARLESS, BLAGDEN, and Co., HACKNEY WICK N.E.

COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS RETORTS and OTHER OBJECTS in FIRE-CLAY," and they have also been awarded in the INTERNATIONAL EXHIBITION of 1862, the PRIZE MEDAL for "GAS RETORTS, FIRE-BRICKS, &c., for EXCELLENCE of QUALITY."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay are promptly executed at their Works as above.
COWEN'S GARESFIELD COALS.
Coal Office,
QUAY SIDE, NEWCASTLE-ON-TYNE.

FIRST PRIZE IN THE PARIS EXHIBITION.
JOHN RUSSELL AND CO.,
THE OLD TUBE WORKS,
CHURCH HILL, WEDNESBURY;
ALMA WORKS,
WALSALL, STAFFORDSHIRE;
and 69, UPPER THAMES STREET, LONDON,
Original Manufacturers of Wrought-Iron Gas Tubes and Holders of the present Patents; Inventors and First Makers of LAP-WELDED FLUES for Steam Boilers.
J. R. and Co. make all kinds of Tubes and Fittings for Gas, Steam, and Water, and the largest Orders may be executed in a few days.
Gun Metal, and all other kinds of Cocks, Stocks, Dies, and Taps, Galvanised Tubes, &c.
N.B. All Goods thoroughly Tested before sent out, and Warranted.

JOHN BENT & SON,
WET AND DRY GAS-METER
AND
STREET-LAMP
MANUFACTURERS,
BELL BARN ROAD, BIRMINGHAM.
ESTABLISHED 1830.
All materials found for the altération of Public Lamps for lighting with the Rod. Regulators with Lava Burners.

BLAYDON BURN AND LOW BENWELL FIRE CLAY RETORT AND FIRE-BRICK WORKS,
NEAR NEWCASTLE-ON-TYNE.
WILLIAM COCHRAN CARR begs most respectfully to thank the Metropolitan, Provincial, and Continental Gas Companies for their patronage for several years past, and to intimate that he has rebuilt and enlarged his extensive premises for the Manufacture of CLAY RETORTS; and that he is now prepared to execute the largest orders with punctuality and despatch. Orders for FIRE-CLAY RETORTS, of all shapes and sizes, FIRE-BRICKS, and all other Articles in Fire-Clay, executed on the shortest notice, and on the most reasonable terms.
London Agents: JAMES LAWRIE & CO., 63, OLD BROAD STREET, CITY, LONDON.

THE "LOTHIAN" CANNEL COALS.
These Cannels are extensively used in the Gas-Works of Edinburgh, where the illuminating power of the gas is the highest in Britain.
The yield per ton is 12,573 cubic feet; illuminating power 33·8 standard candles; coke per ton 1046 lbs.
Ports of Shipment, in the Firth of Forth.

AYRSHIRE CANNEL COALS.
These Cannels are used in Glasgow, Greenock, Paisley, and other Gas-Works on the West Coast of Scotland.
The yield per ton is 10,650 cubic feet; illuminating power 24 standard candles; coke per ton 1216 lbs.
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For prices and other information, apply to Mr. JOHN ROMANS, C.E., 53, Frederick Street, EDINBURGH.

NOTICE.
LESMAHAGO GAS OR CANNEL COAL.
JAMES FERGUSON & CO., Auchinheath COLLIERY, LESMAHAGO, and the NITSHILL & LESMAHAGO COAL COMPANY, AUCHINHEATH AND SOUTHFIELD COLLIERIES, LESMAHAGO, sole Proprietors and Producers of the above celebrated GAS COAL, beg to intimate to Gas Companies and other consumers that, having reason to suspect that Cannel or other Coal of very inferior quality, both as regards the quantity and illuminating power of the Gas, has frequently been mixed with and sold under the name of "Lesmahago," they have now appointed Messrs. JAMES LAWRIE & Co., of 63, Old Broad Street, LONDON, E.C., sole agents for England; and Messrs. LA COUR & WATSON, of LEITH, sole agents for foreign markets; and, in order to prevent a recurrence of the frauds named, they request that all purchasers will send their orders through the above-named firms. Orders for other than the above-named markets may be forwarded direct to either of the Proprietors.
The Proprietors will, in future, use their own forms of bills of lading, and also issue certificates of origin, signed, as the case may be, either by JAMES FERGUSON & Co., or by the NITSHILL & LESMAHAGO COAL COMPANY; and they request all consumers purchasing Lesmahago Coal to demand such a certificate for each cargo, and to observe that it corresponds with the bill of lading.
Auchinheath, Lesmahago, March, 1868.

MEDAL AWARDED, EXHIBITION, 1862, "FOR GOOD WORK."
THE IMPERIAL TUBE COMPANY, BIRMINGHAM,
MANUFACTURERS OF
WROUGHT-IRON TUBES & FITTINGS, BRASS & COPPER TUBES,
GALVANIZED & GLASS ENAMELLED TUBES & FITTINGS,
LAP-WELDED IRON & BRASS BOILER-TUBES, ETC., ETC.
☞ Sole Makers of "HUGHES'S PATENT TAPS," Strongly recommended for all High-pressure purposes.—Price List and Testimonials forwarded on application.

CROLL'S DRY GAS-METER,
PRIZE MEDALS. (INVENTED & PATENTED IN 1844,) PRIZE MEDALS.
LONDON, 1851; NEW YORK, 1853; PARIS, 1855.
COMBINING ALL THE LATEST IMPROVEMENTS,
MANUFACTURED ONLY BY
LONDON, 1862; DUBLIN, 1865; PARIS, 1867.
THE GAS-METER COMPANY, LIMITED,
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A. ANGUS CROLL, C.E., Chairman. GEORGE RAIT, Managing Director.

JOURNAL OF GAS LIGHTING NEWSPAPER PENNY

FRASER'S PATENT RIBBED RETORTS.

The following are taken indiscriminately from a number of testimonials as to the merits of the Fire-Clay and Cast-Iron Ribbed Retorts:—

Gas-Works, Merthyr Tydfil, Sept. 2, 1868.

Sir,—We have had 15 of your Ribbed Clay Retorts in use at these works for the past twelve months. I am happy to be able to report favourably of them. It appears to me that the Ribs afford additional strength to the Retort, whilst they render the charge porous, so that the gas is more freely disengaged from the coal, and the deposit of carbon does not take place to the same extent that it does in plain Retorts. I believe the principle of construction applied to your Retorts may be adopted for Fire-Brick Retorts and Ovens, and with results equally beneficial.—I am, sir, yours faithfully, J. L. Cocker, General Manager.

Gaslight Company, Shrewsbury, Oct. 8, 1868.

Dear Sir,—In reply to yours, I beg to state that we have nine of your Cast-Iron Ribbed Retorts at present in work. As they retain to the last the original shape, and allow the heat to penetrate the charges more effectually than those known as plain ones, we consider they are the most economical and efficient in use.

Yours very respectfully,
A. C. Fraser, Esq. S. B. Darwin.

For further particulars, apply to A. C. Fraser, Gas-Works, Colchester.

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SECOND-HAND
FIRE AND BURGLAR PROOF
SAFES.

Before purchasing send for
GRIFFITHS' MONTHLY LIST OF SAFES,
By Milner, Marr, Thos. Perry and Sons, Mordan, Price, Whitfield, and every eminent maker, at about half the price of new.
A guarantee given with each.
A large quantity of TANN'S SAFES from £2 10s.
Apply to Griffiths, 43, Cannon Street, E.C.

B. CARPENTER'S
IMPROVED
WOOD SIEVES FOR GAS PURIFIERS.

WORKS:
14, JOHN STREET, PENTONVILLE ROAD,
LONDON, N.

The above Sieves are used by the principal Gas Companies in London and the country. Their utility, durability, and cheapness combined, render them superior to all others.
Testimonials from Gas Engineers who have tested their qualities forwarded on application.
All orders punctually attended to, and estimates given if required.

NINETEEN YEARS PRACTICAL EXPERIENCE.

EDWIN BENTLEY,
RETORT SETTER,
29, LOWER HOPE STREET, HALIFAX,
YORKSHIRE.

Fire-Clay and Iron Retorts, Double and Single Grooved Brick Retorts, of every description.
Bentley's Improved D Brick Segment Retorts, 5 or 3 in one bed.
Testimonials and references on application.

HARRIS AND PEARSON,
STOURBRIDGE.
PROPRIETORS OF
BEST GLASS-HOUSE POT & CRUCIBLE CLAY.
MANUFACTURERS OF
FIRE-BRICKS, GAS-RETORTS, AND FIRE-CLAY GOODS
OF EVERY DESCRIPTION.

Orders of any magnitude, for home and exportation, executed with all possible despatch.
N.B.—A quantity of Retorts in stock.
Circulars, 15 in. and 16 in. Ovals, 20 in. by 14 in.
D's, 15×13, 16×12, 18×14, 20×16, 21×14, 24×14.

WALTER MABON & CO.,
Engineers,
ARDWICK IRON-WORKS,
FAIRFIELD STREET, MANCHESTER,
MANUFACTURERS OF
IRON TANKS, GASHOLDERS,
GAS APPARATUS,
PIPES, VALVES, IRON ROOFS,
WROUGHT AND CAST-IRON GIRDER

DESIGNS, SPECIFICATIONS, & ESTIMATES FURNISHED.

WALTER FORD,
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MANUFACTURER OF WET AND DRY GAS-METERS, STATION-METERS, GOVERNORS, &c. &c.

Sole Manufacturer of PADDON'S PATENT STREET-LAMP REGULATORS, for insuring any required consumption. These Regulators are in general and increasing use, and references can be given to Gas Companies who use them for every Lamp.

GEORGE ANDERSON,
GAS AND CONSULTING ENGINEER,
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Mr. ANDERSON advises Companies on all matters connected with the manufacture of Gas and the construction of Works.

PATENTEE and MANUFACTURER of the following Inventions:—
RETORT SETTINGS, heated by tar without the production of smoke.
STEAM-ENGINES and EXHAUSTERS, separately or combined.
FOUR-WAY VALVES, one of which is equal to three ordinary Valves.
STATION GOVERNORS—the Gasholder cannot tilt and cause accident.
BREEZE AND TAR FUEL MACHINE.

A Pamphlet containing Eighteen Illustrations of the foregoing, with letterpress on the construction of Works, post free, 2s. 6d.

N.B.—The second edition of this Work, *now ready*, contains illustrations of the Machine for converting Breeze and Tar into Fuel for heating the Retorts.

"The Author is well qualified to speak authoritatively upon the important subjects to which his pamphlet refers."—*Artizan.*

TO MANAGERS OF GAS-WORKS.

MANN'S IMPROVED SCRUBBER.

See Description and Sketch in "JOURNAL OF GAS LIGHTING," March 31, 1868.

Messrs. WESTWOOD & WRIGHTS are prepared to submit estimates for the supply and erection complete of the above, either in London or the Provinces.
Messrs. W. & W. have already constructed several, which are now in successful operation, and give great satisfaction.
In cases where Scrubbers are already constructed, estimates will be submitted for altering and adapting to this principle.

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No. 4, WHARF, CANAL ROAD, KINGSLAND ROAD, LONDON, N.
HOPE BOILER & GASOMETER WORKS,
BRIERLEY HILL, STAFFORDSHIRE, NEAR DUDLEY.

HENRY F. WILLEY,
(Manager for the late Mr. Vickary, of Exeter, 15 years,)
GAS ENGINEER AND CONTRACTOR.
WORKS: BARTHOLOMEW STREET, EXETER.

Improved Wet and Dry Meters. Gas Apparatus and Gas-Fittings Manufacturer.
Contractor for the Erection of Gas-Works, Gasholders, Station-Meters, Governors, and every article and apparatus appertaining to Gas-Works.

A GREAT SAVING OF TIME, LABOUR, & EXPENSE
IS EFFECTED BY THE USE OF
PRICE'S
PATENT COAL AND COKE BARROWS.

In addition to other testimonials the following has recently been received from one of the largest Gas Companies in London:—

London Gaslight Company, Nine Elms, May 18, 1868.

Dear Sir,—The Patent Coke Barrows are a great improvement, and a saving both in time and labour.

Yours truly, D. Watson.

They are in use in the Government, Metropolitan, and several country Gas-Works.

Manufacturers for London and South of England—PRIEST & WOOLNOUGH, KINGSTON-ON-THAMES.
Manufacturers for the Midland Counties and North of England—
THE COALBROOKDALE COMPANY, near WELLINGTON, SALOP.
Manufacturers for Ireland—J. EDMUNDSON AND CO., CAPEL STREET, DUBLIN.

Communications to be addressed to the Sole Agent, R. E. KEEN, 50, Claremont Road, Surbiton, S.W.; or either of the above.

D. GRANT & CO.,

GAS-METER MANUFACTURERS.

STATION-METERS ANY SIZE.

PHOTOMETERS, EXPERIMENTAL METERS,

PRESSURE-GAUGES, &c.

Price List on application.

GAS-METER WORKS, CROSSCAUSEWAY, EDINBURGH.

INTERNATIONAL EXHIBITION,

1862. CLASS X.

PRIZE MEDAL

For excellence of Fire-Clay Gas Retorts, and "HONOURABLE MENTION" for good quality of Fire-Bricks.

WILLIAM STEPHENSON & SONS,

THROCKLEY,

NEWCASTLE-ON-TYNE.

JAMES NEWTON & SONS,

(Established 1820,)

FIRE-BRICK AND TILE MERCHANTS,

Wholesale and for Exportation,

FALCON DOCK, 78 AND 79, BANKSIDE,

SOUTHWARK, LONDON, S.E.,

DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and FIRE-CLAY, and every Article suitable for

GAS AND WATER WORKS.

HANCOCK'S INDIA-RUBBER GAS-TUBING.

All sizes, from ¼ in. to 4 in. diameter and upwards.

Also,

HORSE SINGEING APPARATUS, best make, with GAS-BURNERS, COMBS, and INDIA-RUBBER TUBING, all complete.

INDIA-RUBBER BAGS for GAS-MAINS.

WASHERS for GAS and STEAM JOINTS.

VALVES (pure solid Rubber) for STEAM-ENGINES.

PACKING (Elastic) for STEAM-ENGINES.

FLANGE TUBING, for excluding Draughts and Dust through WINDOWS, DOORS, and GLASS CASES.

Section.

Illustrated Price Lists on application.

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Vulcanized India-Rubber Works,

GOSWELL MEWS, AND 266, GOSWELL ROAD LONDON, E.C.

Established 1811.

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BILSTON STREET BRASS FOUNDRY,

WOLVERHAMPTON,

MANUFACTURERS OF

SUN BURNERS, GAS CHANDELIERS,

ALL LANTERNS, BRACKETS, PENDANTS

And every Description of

GAS-FITTINGS,

Including

MEDIÆVAL FITTINGS for CHURCHES, &c.

Large Pattern Books complete, with Book of Prices, 7s. 6d.

STOURBRIDGE FIRE-CLAY WORKS.

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24 WHARF, HARROW ROAD, PADDINGTON, W.

FIRE-BRICKS, LUMPS, SQUARES, and TILES of all dimensions.

GAS-RETORTS always in stock.

GARDEN EDGINGS of various patterns.

ORNAMENTAL BUILDING BRICKS.

GRATE BACKS in various designs.

Contracts entered into to set Retorts, erect Furnaces, &c.

Shipments on the shortest notice.

Makers of A. C. FRASER'S Patent Ribbed Retorts and Brick Ovens.

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MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.

Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.

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Information as to cost, &c., supplied gratuitously upon application to the advertiser, 42, Parliament Street, WESTMINSTER. [Office of the JOURNAL OF GAS LIGHTING, &c.]

Trade Mark. **THE MEDAL FOR 1862.**

THE ONLY PRIZE MEDAL AWARDED FOR TUBES AND FITTINGS.

CROWN TUBE-WORKS,

WEDNESBURY STAFFORDSHIRE.

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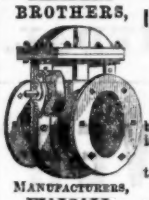
Patentees and First Makers of Wrought-Iron Tubes.

LAMBERT BROTHERS,



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REDUCED PRICES OF

IMPROVED GAS-VALVES

WITH WROUGHT-IRON PINIONS.

2, 2½, and 3 in.... 12s. per in.
4 in. to 6 in..... 11s. „
7 in. to 12 in..... 10s. „

These Valves are all proved on both sides to 20 lbs. on the square inch before leaving the works.

Valves made with outside racks to order.

Also Water-Valves, with gun-metal faces and gun-metal screws.

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MANUFACTURERS OF

CRYSTAL, BRONZED, & ORMOLU CHANDELIERS;

IMPROVED CRYSTAL STAR & SUN LIGHTS;

VESTIBULES,

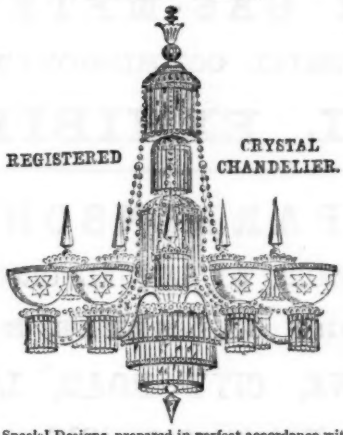
IRON BARREL, COMPOSITION TUBING,

AND

GAS-FITTINGS OF EVERY DESCRIPTION.

WORKS:

LONDON, BIRMINGHAM, AND PARIS.



REGISTERED CRYSTAL CHANDELIER.

Special Designs prepared in perfect accordance with architectural arrangements. Estimates furnished for the Lighting and Fitting up of Theatres, Music-Halls, and Public or Private Buildings with Gas.

GAS MOONS OF THE NEWEST DESIGNS.

The Patent Gas-Regulator & Purifier reduced to 6s. 6d. per Dozen.

Pattern Books of Gas-Fittings, Crystal and Ormolu Chandeliers for 1868, are now complete.

CITY SHOW-ROOMS & MANUFACTORY,

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THOMAS EDINGTON & SONS,

PHŒNIX IRON-WORKS,

GLASGOW,

Manufacturers of all kinds of

GAS AND WATER PIPES,

Branches, Bends, Water-Traps, Tank-Plates, Valves, and general Castings. Also

RAILWAY CHAIRS & SLEEPERS,

AND

GRIFFIN'S PATENT PERMANENT WAY.

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J. SUGG and CO., late ALBERT KELLER, Ghent.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.

Communications, addressed to J. SUGG and Co., GHENT, will receive immediate attention.

C. & W. WALKER,

IRONFOUNDERS,

MIDLAND IRON-WORKS, DONNINGTON,

NEWPORT, SHROPSHIRE,

CAST EVERYTHING USED in GAS-WORKS;

MAKE AND ERECT GASHOLDERS

OF ANY MAGNITUDE;

CAST-IRON GASHOLDER TANKS,

PIPES, & LAMP COLUMNS.

They ask especial attention to their

Important Improvements in Purifiers,

CONDENSERS, SCRUBBERS, & IRON ROOFS.

WALKERS' GAS-VALVES,

WOOD PURIFIER GRIDS,

PORTABLE STEAM BOILERS for GAS WORKS

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SOCKET, FLANGE, HOT-WATER PIPES, AND ALL CONNEXIONS; RETORTS, HYDRAULIC MAIN, LAMP-COLUMNS, &c.; AND EVERY DESCRIPTION OF CASTINGS AND WROUGHT-IRON-WORK FOR GAS AND WATER-WORKS, STEAM, AND GENERAL PURPOSES.

N.B.—All goods kept in stock, and supplied at wholesale prices. Estimates given, and orders by post punctually attended to the same day.

JAMES OAKES and CO.,

ALFRETON IRON WORKS, DERBYSHIRE,

AND

WENLOCK IRON WHARF, 20, WHARF ROAD, CITY ROAD, LONDON,

Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water-Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.

N.B.—Orders for Cast-Iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.

CHARLES HORSLEY, Agent.

JAMES M'KELVIE,

CANNEL COAL MERCHANT,

HAYMARKET,

EDINBURGH.

Established 1840.

FIRE-CLAY GAS-RETORTS, &c., CANNEL AND STEAM COALS.

WILLIAM FRASER, Inverkeithing (owner of the Works at which Fire-clay Retorts were first made), having greatly enlarged his works, can supply retorts and other fire-clay goods to any extent.

References can be given to managers of above a hundred Gas-Works whom he supplies.

WILLIAM FRASER ships COWDENBEATH PARROT COALS at Charlestown and Burntisland at 12s. per ton; and HALBEATH STEAM COALS, on Navy List, at 8s. 6d. per ton.

D. BRUCE PEEBLES,

Gas-Meter Manufacturer,

FOUNTAINBRIDGE

EDINBURGH.

J. T. B. PORTER & CO.,

GAS ENGINEERS,

MANUFACTURERS AND CONTRACTORS FOR GAS-WORKS

Of any extent at Home and Abroad,

GOWTS BRIDGE WORKS, LINCOLN,

AND

JOHN STREET, ADELPHI, LONDON, W.C.

ALFRED PENNY, Gas and CONSULTING ENGINEER,

WENLOCK IRON WORKS,

21, WHARF ROAD, CITY ROAD, LONDON.

Mr. PENNY having had a large experience in the construction, alteration, and management of Gas-Works, begs to inform the Directors of Gas Companies that he may be consulted on all matters appertaining thereto. He also manufactures Gasholders, Purifiers, and all the various apparatus used in Gas-Works, and keeps in stock Retorts and Mouthpieces, Socket-Pipes, Bends, Branches, T-pieces, &c. &c.

Plans, Specifications, and Estimates prepared.

ADDISON POTTER,

WILLINGTON QUAY,

NEAR NEWCASTLE-UPON-TYNE,

Manufacturer of Clay Retorts, Fire-Bricks, and every description of Fire-Clay Good s

THE

UNIVERSAL EXHIBITION OF PARIS,

1867.

SILVER MEDAL.

THOMAS GLOVER & CO.,

DRY GAS-METER MANUFACTURERS,

214 TO 222, ST. JOHN STREET, CLERKENWELL GREEN,

LONDON,

HAVE BEEN AWARDED THE HIGHEST PRIZE FOR

DRY GAS-METERS,

BY THE IMPERIAL COMMISSIONERS FOR THE

UNIVERSAL EXHIBITION, 1867.

WILLIAM PARKINSON AND CO.

(SUCCESSORS TO SAMUEL CROSLEY),

PATENT WET AND DRY GAS-METER MANUFACTURERS, &c.

COTTAGE LANE, CITY ROAD, LONDON, E.C.

Established 1816.

PATENT IMPROVED WET METER.

W. P. and Co. invite especial attention to this Meter, which entirely overcomes the difficulty to which ordinary Wet Meters are subjected, owing to the short range of the Float, which is necessary, in order to meet the requirements of the Sale of Gas Act.

"It is well known that n Meters constructed so that the valve will close when the water is drawn off to such a point as to render them 3 per cent. slow the lights are liable to be extinguished by the closing of the valve by a sudden increase of pressure. To meet this difficulty, Mr. Pinchbeck has invented an ingenious and simple arrangement by which the action is reversed, and any such increase of pressure, in his Meter, raises the value instead of depressing it. The fact of the improvement having been adopted by Messrs. W. Parkinson and Co. is a sufficient guarantee that it practically and effectually remedies the inconvenience it is designed to meet."—JOURNAL OF GAS LIGHTING.

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NOTICES.

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THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, NOVEMBER 24, 1868.

Notes upon Passing Events.

To readers interested in such social questions as Education, the economical reform of our military and naval expenditure, the promotion of arterial drainage, all the questions involved in capital and labour, poor-law administration, and useful sanitary progress, the results of the elections are important, irrespective of any and every shade of politics. In the unopposed return of Mr. Lowe we see the future Minister of Education—a man who thoroughly understands the subject, who has definite views, and no prejudices. Himself a distinguished classman of Oxford, and a modern linguist of no mean calibre, he carries more weight when he attempts to limit the excessive time devoted to the mere foundation of learning, than the very rich, very sharp member of Parliament, ignorant of everything except what he has picked up in the course of a busy, successful, money-making life. Mr. Bruce, on the other hand, who would, from his temper, talents, and long experience, have been an invaluable coadjutor on the same subject, has been superseded by a mere money-making ironmaster, ready to promise anything for the honours of Parliament, and a fanatic whose merit is that he is a Welshman and a Dissenter—that he will not attempt to recommend, as Mr. Bruce did, cleanliness to dirty Merthyr Tydvil—and who promises to save all the expenses of the army and navy by civil speeches to foreign Powers. Mr. Seely returns again to assault the folly and jobbery of the Admiralty. He will not have the assistance of his son, who was beaten at Nottingham; but he may count on that of Mr. Samuelson, of Banbury, and his son—returned by a fortunate fluke at Cheltenham—young enough to learn the business of the House of Commons. Mr. James Howard, of Bedford, like Mr. Bernhard Samuelson, a mechanical engineer and manufacturer, will be a valuable officer in the army of administrative reformers, for besides thorough experience as a machine manufacturer, he has the presence, the voice, and the energy that Mr. Seely and Mr. Samuelson both want. Mr. Laird, who was silent while his friends were in office, will, no doubt, bring his vast experience as a builder of war-ships to bear on the zig-zag schemes of the surveyors and comptrollers of the navy, and will prove too hard for such clever accountants as Mr. Childers and Mr. Stansfeld. Accounts are not to be undervalued; they are needed to ascertain the truth; but after accounts have shown how much is spent, practical scientific skill and manufacturing knowledge must follow to build up a better system of spending the money. Although we cannot spare Mr. Laird, the nation would be well served by his opponent, Captain Sherard Osborn, a naval officer of the best modern school. Mr. Samuda, thanks to Mr. Newton's rivalry with Mr. Beales, has been sent in with Mr. Ayrton, who would be the natural leader of the administrative reformers if he would only take one subject and stick to it, instead of aspiring to be an oracle on all that Parliament touches. Mr. Bentall, of Essex, although only famous in the humble line of chaff-cutters and turnip-pressers, is an agricultural implement maker, like Messrs. Samuelson and Howard. When we remember that a few years ago the squires looked on the members of this calling as a superior kind of blacksmith, the change wrought by time and Corn Law Repeal must be rather surprising and mortifying. There are others among the new men who will contribute their quota of information on the questions that cost the nation so much money under the management of pleasant and practically ignorant gentlemen. We have lost some M.P.'s who would have been useful in specialities. For instance, there was Major Anson, who is strong on great guns and small-arms; and Captain Palisser, a new man, who would have spoken for his guns and chilled shot, but he seems to have selected the beaten cause for his banner. We can console ourselves for the loss of mere money in the person of Baron Rothschild. The preference at Peterborough of the pert ultra-Protestant cocksparrow Whalley for such a decorous Claphamite as Thomson Hankey, must very much astonish the latter. Mr. Edwin Chadwick, in spite of Mr. Mill's recommendation, has been ignominiously rejected by

Kilmarnock, and Captain Bedford Pim's change from red republicanism to official principles, conjoined with his talent for self-praise, has not obtained him a majority at Gravesend. This excellent imitation of the frank British tar will not be able to bring the magic letters M.P. to assist his company-promoting schemes.

The London public has lately become alarmed by the frequency and violence of felonious outrages. The public is very much surprised, and complains of the police, the magistrates, and everything else except itself. Crime in the metropolis has passed through the same stages as sewage, when, in a hot summer, it was suddenly discovered that the Thames was a stinking, poisonous sewer. Thirty years ago we used to hang criminals who are now sentenced to divers terms of imprisonment, with a certain ticket-of-leave after at most seven years. Thirty years ago we sent the majority of felons, male and female, to New South Wales, Tasmania, and what was then called Swan River. All the prosperity of the Australian colonies, including those that were never convict settlements, was built up by convict labour. Without convict labour South Australia and Victoria would never have existed. The time came when we brought hanging to a minimum, and were compelled to cease to transport criminals to regions where their food and inspection cost us nothing. So with our sewage. Before the days of Bramah's water-closet, and for some time afterwards, the sewage of London was turned into cesspits and ashpits, whence it was carted away into the country to fertilize market-gardens, farms, and hop-yards. As we grew nicer in our notions, privies and dung-heaps disappeared in favour of a complete system of sewerage, emptying into the Thames. That came to an end in the famous hot summer, and the grand main drainage scheme removed the difficulty lower down to points in Essex and Kent, where few noses are offended, but where the navigation of the Thames is likely to be blocked up. Our felons, after a course of punishment and probation which improves very few, are turned once again into the stream of London and English life. A positive school of crime, combining practical with theoretical instruction, is set up in the midst of a society regulated by extreme rules of constitutional liberty, and by principles of the most humanitarian kind. The theory that every man is presumed innocent until found guilty or caught in the fact, is applied to twice and thrice convicted ruffians. If the humanitarian become thoroughly successful, we shall have a school of murderers walking about with tickets-of-leave to inculcate amongst their pupils the safe axiom that dead men tell no tales. Our treatment of assaults on the police as offences to be settled by a fine is simply ridiculous. Our police is so hampered by laws and regulations—which were only fit for society when hanging and transporting annually diminished the stock of ruffians—that their best hope of promotion is in keeping out of the way when any deed of violence is likely to be done. If Sir Richard Mayne spoke his true mind, he would say to his subordinates, with Talleyrand, "Above all, no zeal." We do not ask for the murder of a Cabinet Minister, because now-a-days people do not think much of Cabinet Ministers of the second class; but if by good luck in the same month a burglary with violence could be arranged in the mansions of the Bishop of London, Archbishop Manning, Dr. Cumming, and the house of whatever pastor is most frequented by Mr. John Bright, it would ripen very fast the "pear" of public opinion on the treatment of incorrigible criminals. The word *surveillance* is scarcely understood in English police management. The police know ruffians by the head; they know their haunts; they know where schools of crime are held nightly. But the police officer of any rank who made a practice of stopping undoubted criminals and asking them how they got their bread, where they were living, and where they were going, would be likely to be reprimanded by his superiors, because attacked in the patriotic press. We may beat about the bush, we may shiver on the brink of constitutional law, but sooner or later we shall find that strong diseases require violent remedies. There is an old Joe Miller of an Irish soldier who was reprimanded by a humane gentleman for striking his bayonet through a bulldog that had run at him open-mouthed. "Why," said the benevolent gentleman, "did you not hit the "poor dumb thing with the stock of your musket?" "Why, "so I would," replied Paddy, "if he had run at me with his "tail." We are meeting knives, bludgeons, and the garotter's knuckles with civil speeches. Bill Sykes, the burglar, is quite sure that he will not be interfered with as long as he is not caught in the fact, or under very suspicious circumstances; while industrious John Brown, quietly marching home from his daily occupations, is liable to be robbed and half murdered by a group of lounging fellows well known to the policeman, but with whom he dare not interfere. It is quite useless to complain of the police until you change the law, and enact exceptional measures of precaution and severity to protect peaceable, law-abiding, industrious citizens from an exceptionally criminal class. The liberty of the subject at present means liberty for ruffians to tyrannize over honest men. As for assaults on the police in the execution of their duty, they should invariably be punished by imprisonment with hard labour, and in very brutal cases with flogging.

The council of the Institution of Civil Engineers have issued their annual circular, inviting communications on thirty-two subjects. Among these are several of peculiar interest at the present time, and some old friends often discussed, but still open for new illustrations if not new arguments. "The Prin- "ciples to be observed in Laying Out Lines of Railway in "Mountainous Countries" will bring out examples of improvements of very recent date from India and Italy. "The "Transmission of Railway Trains entire across Rivers and "Estuaries" will, no doubt, bring before the most competent tribunal in the world the latest plan for exchanging trains between England and France. The tunnel scheme and the bridge scheme will have their advocates, but if the traffic demands further accommodation, which we doubt, steam ferry will be the first experiment tried. "The Description of the "Modern English Locomotive Engine" will tell us what and how much we have learned since we invented the railway locomotive from other nations. In French histories of the locomotive we only find two English names mentioned at the foot of a pyramid of French inventors whose fame has never crossed the Channel. With the last paper will probably be combined a discussion. "The leading points of difference "between Engines and Carriages in use on Railways in the "United States and Great Britain, and the reasons for any "peculiarities in the American practice." We want something more exact than the reports of unprofessional travellers, so that if there is anything worth imitating we may make use of it. The engineers and surveyors responsible for the pavement of the metropolis ought to give us a good paper and an instructive debate "On the most suitable Materials "and the best Mode of Formation of the Surfaces of "Streets of large Towns." We shall hear the truth about the water supply of Lancashire and Yorkshire in the discussion "On the Construction of Catchwater Reservoirs "in Mountainous Districts," "The Drainage of Towns, "and the ultimate Disposal of Town Refuse," discussed we dare not say how many times in scientific and semi-scientific societies, will on this occasion be illustrated by examples from a dozen new districts where irrigation or deodorization has been tried. The paper "On Gas-Works, with a view to the Manufacture "of Gas of high Illuminating Power, and on the most Econo- "mical System of Distribution of Gas, and the best Modes of "Illumination in Streets and Buildings," will be a volume of the highest original value, if carefully prepared with competent assistance, very cheaply paid for by a Telford medal. "The "Arrangement of Floating Landing-Stages for Passengers," is another subject particularly interesting at the present time, and on which there are no accessible directions. The discussion "On Ships of War" will tell us what progress has been made since Mr. Bidder read the very *thin* paper for which he was fortunate enough to obtain one of the Institution's medals. One of the most valuable subjects suggested is that "On Iron-Works," and "The Conversion of Cast Iron into the Malleable State" will doubtless record all that has been done at home and abroad since Bessemer took the manufacturing world by storm with his string of patents. The council might now consider with advantage the propriety of republishing some of the papers of permanent interest, edited by the writers, in a popular form, at a moderate price, for the benefit of the profession and the public.

A profitable means of deodorizing town sewage is one of the urgent wants of the country. There are many situations in which irrigation cannot be applied to land without considerable expense. Among the latest claimants for successful deodorization are the inventors of the A. B. C. process, so called from the initial letters of animal charcoal, blood, and clay. If the statements in the pamphlet of the patentees can be sustained, they need assistance from no one; customers

will be found all over the kingdom. If they can produce a manure worth seventy shillings a ton, they will be as welcome at Barking Creek as at Tunbridge Wells. A patent for a manure from sewage produced at a profit of a pound a ton is worth more than a gold mine, although it will not compete with Peruvian guano any more than electrotype competes with and lowers the price of silver. The following extract gives Messrs. Sillar and Wigner's account of the mode of working the process at Leicester. Is it still used at Leicester? and if not, why not?

The charcoal, blood, clay, and alum, with small quantities of gypsum, and one or two other ingredients, were allowed to soak in water for about one hour, in a tank holding some 800 gallons. At the end of that time they were allowed to flow into a circular well on the same level as the bottom of the sewer. An agitator, revolving in this well, kept the mixture in a state fit for use. Attached to each of the pumping-engines, which pumped about 200 gallons of sewage per stroke, was a small pump drawing from this well and throwing about 1½ gallons per stroke. These two pumps delivered their respective liquids into a culvert leading to the settling-tanks, a perfect mixture being produced by a small agitator placed in this culvert. The sewage was about two hours in passing through the tanks, but in far less time than this all the suspended matter had fallen to the bottom, and the water was clear. The precipitating-tank was divided transversely into two parts, and at the division a small quantity of a very dilute solution of perchloride of iron was allowed to drip in; this precipitated the sulphuretted hydrogen, and entirely freed the water from smell. It then passed on through the other tank, and ran over a dam into the river Soar.

In order to use the mud over again, it was raised by elevators from the bottom of the tanks and allowed to flow into the mixing-pit, thence to be again pumped into the tanks.

The actual result may be summed up as follows:—

1. The sewage contained 43·02 grains per imperial gallon of organic matter. Of this the A. B. C. process precipitated 33·33 grains, leaving only 9·69 grains in the water, and this from an average of fifty samples taken at intervals during the progress of the experiment.

2. Hitherto the lime process has been acknowledged to be the best, and the Leicester mode of conducting it to be the best of its kind. The A. B. C. contrasts most favourably with this, inasmuch as, from samples taken at the same time from each, the water contained as follows:—

Water from the A. B. C. contained 9·69 grains per imperial gallon.
" " lime " 16·18 " " "
having precipitated from the sewage the following proportions:—
Organic matter precipitated by the A. B. C., 77·48 per cent.
" lime " " " lime 62·39 "

3. Of the nitrogen in the form of ammonia in the sewage, nearly all is dissipated by the lime process, but by the A. B. C. about 80 per cent. was retained in the residuum.

4. Of the phosphates in the sewage, the lime process threw down 82 per cent., in a form unavailable, owing to the presence of lime; but the A. B. C. threw down the whole, and in a form readily available.

5. During the act of precipitation by the A. B. C. process there was no objectionable odour, whilst that from the lime was "horribly offensive," owing, of course, to the ammonia and other gases being driven into the air by the lime.

6. The water from the A. B. C. is in no way detrimental to fish in the river. We have fish which have been for some weeks living in the purified sewage of Leicester.

7. By the A. B. C. process restitution can be made to the soil, by preparing in suitable form for putting *into* it (not *on* to it).

We observe from a paragraph in the daily papers that the Home Secretary has been employing a Lieut.-Colonel Ewart to report on sewage irrigation. That any information was wanted, may be doubted; that a colonel of engineers could offer any new or useful views, is more than doubtful. Could not one intelligent farmer be found for the purpose amongst all the agricultural interest? It may, however, be urged in favour of the Home Secretary—first, that he did not employ a barrister of five years standing; and, next, that he only followed the example of the Royal Agricultural Society. That society, which has adopted "Practice *with* Science" for its motto, having decided to economize by uniting the offices of secretary and editor of their *Transactions* in one person, on terms which excluded every man of any reputation as an agricultural writer, has recently elected a gentleman who seems to have every qualification except any knowledge of agriculture or agriculturists. He has had experience as a secretary and an editor; he is a chemist, a geologist, a zoologist; and, under the instructions of the committee, will in the course of a few years, no doubt, learn how to extract knowledge from the British farmer, and as much elementary information as will suffice for editing a journal which it seems is not really meant to be read. The motto on the title-page can be changed to "Science *without* Practice."

Circular to Gas Companies.

Scarcely a week elapsed after we had congratulated the metropolitan gas companies on the prospect of a year's cessation from further attacks in Parliament, when an astounding notice appeared in the *London Gazette* of the 17th inst. of the intention of the Board of Trade to bring in a Bill during the ensuing session more revolutionary in its character than any that has hitherto been put forward by the most extreme of gas reformers. The muttered thunder of Mr. Beal, when retreating discomfited from St. James's vestry, was not empty sound. His declaration that the flag he had raised would still be waved—the battle would still be fought—was not an idle boast, for he has succeeded, contrary to all rational expectation, in enlisting the Board of Trade under his banner. How that Board, with the damaging experience of 1867 to warn them, could have been misled to undertake another wild onslaught upon the metropolitan gas companies, surpasses ordinary understandings to comprehend; but it would seem that the President of the Board was overcome by the eloquence of Mr. Beal, backed by the stentorian voice of Mr. Dresser Rogers, and by others who represented themselves to be "delegates" from "several Boards of Works in London." We are informed by the daily papers that those gentlemen, in the character of "a deputation" from the apocryphal Boards of Works aforesaid, which are not more particularly specified, waited by appointment on the Duke of Richmond, to request the Board of Trade to introduce a Bill into Parliament for the purpose of procuring for the metropolis generally the same advantages as the consumers of gas in the City had obtained by the City of London Gas Act. It is stated that Mr. Beal and Mr. Rogers explained those advantages, and also "a very "simple mode that might be adopted for extending that act of "justice to consumers who, from no fault of their own, but "simply from a want of public spirit on the part of the Metro-"politan Board of Works, were prevented from receiving the "advantages to be obtained under the new Act." The President of the Board of Trade listened with an acquiescent ear, and within a few days of the interview the "deputation" received the following reply to their application, addressed to Mr. Beal:—

Sir,—In forwarding the accompanying copy of a parliamentary notice relating to the supply of gas to the metropolis, I am directed by the Board of Trade to explain the circumstances under which the Board of Trade have determined on issuing it. By the Act of last session, passed after several years of agitation and discussion, considerable alterations were made in the Metropolis Gas Act of 1860, more especially as respects illuminating power, price, and purity. But the Act of last session applies to three only out of the thirteen companies which supply the metropolis; so that, whilst those three companies and the districts they supply are regulated by new provisions which, after long discussion, Parliament has in 1868 determined to be equitable, the other ten companies and the districts which they supply remain subject to the Act of 1860. It is not to be expected that this state of things should continue, and it is for the interest of all parties that a final and complete arrangement should be made as soon as possible. Such an arrangement will require legislation, and no legislation can take place in the coming session unless the requisite parliamentary notices are given. Under these circumstances it has been represented to the Board of Trade that it is difficult for any of the parties interested to take the initiative; and that, unless the Government give the requisite notices, no opportunity will be afforded for complete and satisfactory legislation. To prevent this, and to render legislation possible, the Board of Trade have issued the accompanying notice, which is so framed as to meet all the contingencies which they are able to foresee. This is their sole object as at present advised, and as regards their future action they reserve to themselves entire discretion. At the same time, they will be glad at any time to forward, by all the means in their power, any satisfactory arrangement which the various parties interested may be able to agree upon or to suggest.—I am, &c., T. H. Farrer.

In the foregoing letter it seems to be assumed by the Board of Trade that the metropolitan gas companies exist only for the benefit and at the mercy of the public; that they have acquired no rights from Parliament which may not be abrogated without injustice; that the circumstances of the supply of gas within the City are the same as in other parts of London; and it appears also to be entirely overlooked that the Act which it is proposed to extend to the whole metropolis as "a final and complete arrangement" is in its most important provisions only experimental, and may be revised and altered at the end of the first year of the experiment. The notice of the Bill to be introduced by the Board of Trade is stated to have been "so framed as to meet all the contin-"gencies which they are able to foresee," and provides also for many contingencies which, if foreseen, ought never to have appeared in the notice of a Bill given by any department of a Government that is not revolutionary. The notice occupies upwards of four columns of the *Gazette*, and the introductory summary shows the extent of the "contingencies" provided for, as follows:—

Metropolis Gas.—Amendment and extension of the provisions of the City of London Gas Act, 1868, to the whole of the metropolis; amendment of the Metropolis Gas Act, 1860, and of the local and personal Acts relating to the supply of gas in the metropolis; amalgamation of all or some of the metropolitan gas companies, and adjustment of capitals, reduction of rates, charges, and dividends of the companies; regulating future price, purity, illuminating power, and pressure of gas; purchase by compulsion or agreement and sale of gas-works, and providing other gas-works; to compel gas companies to sell gas in bulk; creation of rent-charges or other securities; levying rates; borrowing of money, and other purposes.

In the expansion of the foregoing general notice into details several other contingencies are provided for to complete the confiscating character of the scheme. The ten companies not included in the City of London Gas Act are to be made liable to contribute towards the expenses of carrying that Act into operation; all the Acts of Parliament granted to the metropolitan gas companies since the establishment of gas lighting may be amended or repealed; all contracts which those companies have entered into for supplying gas, or for any other purpose, are also to be repealed; their districts are to be altered; the power to apply surplus profits to the payment of back dividends is to be repealed; exemptions from the payment of gas-rates are to be created; gas is to be supplied to the public lamps by average meter indication; any company manufacturing gas beyond the limits of the metropolis are to be enabled to supply gas within those limits, or to sell gas in bulk to any of the ten companies; those companies may b compelled to sell their works to the Metropolitan Board o f Works, or to any vestry or district Board; they may be com", pelled to sell gas in bulk to any of the local authorities; and "if Parliament shall so think fit," any of the ten companies may be restrained from selling gas otherwise than in bulk. Of course, not one-fourth of those monstrous propositions would be embodied in any Bill presented to Parliament, or it would have small chance of a second reading; and even a Cardwell committee would repudiate such rapacious confiscation. But it is lamentable that an important department of any Government, especially of one professing conservative principles, should, in the hope of gaining a little paltry popularity, threaten to make a destructive assault on property that is as well secured to its possessors by law as any kind of property whatever. We incline to think that the whole thing is a mistake, arising from ignorance, thoughtlessness, and misrepresentation, and that when the President of the Board of Trade comes to know that Mr. Beal and Mr. Dresser Rogers, so far from being deputed by their respective vestries to request an extension of the City of London Gas Act, were left in ridiculous minorities when they proposed resolutions to that effect, he will feel ashamed of having been duped, and that, taking advantage of the reservation of "entire discretion" in future action, claimed in the letter to Mr. Beal, he will allow the notice to drop quietly, if possible, into any hole and corner that can be found dark enough to hide it.

The principle of amalgamation insisted on by Mr. Cardwell is quietly working its way among the metropolitan gas companies, and when carried into effect will ultimately place the gas supply of London on a more satisfactory basis than it has hitherto been. The arrangement for an amalgamation of the Chartered and of the City of London Company, which was alluded to by the governor of the former company at a recent meeting of the shareholders, has, we understand, been satisfactorily completed. It appears, also, by a notice in the *Gazette*, given by the South Metropolitan Gas Company, that the question of the amalgamation of that company with the Phœnix and with the Surrey Consumers Company is so far arranged that power to complete it is to be applied for in the next session of Parliament. Circumstances seem to favour the amalgamation of the Great Central Company with the two other companies that supply the City with gas, as they are all specially included within the operation of the same Act; but it appears that the Great Central Company prefer at present to retain their separate organization, and they intend singly to promote a Bill to enable them to raise the additional capital of £100,000. The Imperial Company have also given notice that they shall again apply to Parliament for the additional powers requisite to enable them to fulfil the obligations imposed on them by the Metropolis Gas Act.

The Bill of which notice has been given by the South Metropolitan Company will have much greater significance and a more important bearing than the proposed amalgamation with the Phœnix and with the Surrey Consumers Company. It is intended to apply to Parliament for an extension into their district of the provisions of the City of London Gas Act, so far as it relates to the limitation of dividends, the testing of the illuminating power and purity of the gas, and the auditing of the accounts. In the peculiarly favourable circumstances of the South Metropolitan Company, they can also, without apprehension of loss, apply to be placed under the provisions of the City of London Gas Act relating to the illuminating power and the price of the gas they supply. The course which has been thus adopted by the South Metropolitan Company we recently recommended for the consideration of all the metropolitan gas companies, and at the present time, when renewed attacks are threatened, it may be desirable to reproduce our observations on the subject on the 1st of September last—"It may be a question with the gas companies "whether several parts of the machinery of the City of London "Gas Act might not be adopted with advantage. The pro- "visions respecting the appointment of gas referees and ex- "aminers, and an inspection of the accounts by a public auditor, "are all consistent with the principle of the Act of 1860; and "the adoption of those portions of the Metropolis Gas Bill of "last session (1867), to which the companies offered no ob- "jection, might have the effect of giving confidence to the "public that their interests were attended to, and would "strengthen the companies in resisting further attacks on their "property."

The first pile of the river wall of the new works of the Chartered Company at Barking Creek was driven on Thursday last, by Mr. Beck, the governor of the company, in honour of whom the locality has been named "Beck Town." Several of the directors were present, but the proceedings were of a strictly practical character, without any unnecessary feasting or display.

Several matters relating to the gas supply of the City—more particularly to the appointment of a gas examiner—were in the notice-paper at the meeting of the Court of Common Council on Thursday last, but the pressure of other business prevented their being brought under consideration. Among the matters thus postponed was the presentation of the report of the Special Gas Committee respecting the appointment of a gas examiner for the City of London, recommending that Dr. S. Gibbon should be appointed to the office, at a salary of £200 a year. Mr. G. R. Bengough had given notice to move that the appointment of gas examiner should be made by the court, and that the Special Gas Committee should submit the names of three candidates, from which the court should select one. Notice was also given by Mr. H. Gover to move, as an amendment to the report, that as there is reason to believe additional testing-places for gas in the City of London will be immediately appointed, the report be referred back for reconsideration, with the view to the reception of the names of further candidates. The obstruction to the progress of the City of London Gas Act by the delays consequent on squabbles respecting the appointment of the officers who are to act under it do not augur well for Corporation management, should the gas supply of the City be ever placed under the direction of the Court of Common Council.

The two Glasgow gas companies have given notices of their intention to apply to Parliament in the next session for power to raise additional capital. The Glasgow Corporation have also given notices for two Bills relating to the supply of gas, in one of which it is to be proposed to ask for power to erect gas-works of their own, and thus to enter into competition with the existing companies; and the object of the second Bill is to give the Corporation power to purchase the works of those companies on such terms as may be agreed on. The gas companies, it is understood, are willing to sell, provided they are guaranteed the full amount of their prescribed dividends, but the Corporation are not inclined to agree to those terms. They conceive that, as the bonds of the Corporation would afford better security than gas shares, they are intrinsically of greater value, and that a proportionate reduction should be made in the amount to be paid. If the companies agree to that principle of arrangement the Corporation have expressed their willingness to deal liberally in the construction of it.

The terms on which the Dukinfield Gas Company have sold their undertaking to the Local Board afford another instance of the uncertainty prevailing in the estimation of the value of gas property. The sum the shareholders are to receive is £34 for each share of £20, on which £16 only has been paid. The basis of the arrangement was, we believe, the payment of a premium of £100 per cent. on the amount paid per share, with £2 added for the prospective premium on the £4 per share not paid up.

A tentative attack by speculators on a gas company protected by parliamentary authority, similar to that attempted two or three years ago at Rochester, is threatened at Oxford. The Oxford Gas Company was established in 1818, with a capital of £18,000, but without borrowing powers. The company have since constructed extensive works out of profits, and are now supplying about 80 million feet of gas per

annum, at a maximum price of 4s. per 1000 feet. Under those circumstances there ought not to have been any dread of competition; but some speculators, totally unconnected with Oxford, thinking there was some chance of making money by bringing forward a competing scheme, have given a parliamentary notice of their intention to do so. The Oxford Gas Company also, after incurring the danger with which they are threatened by neglecting to place themselves under the provisions of modern gas legislation, have, at the eleventh hour, given notice that they intend to promote a bill for raising additional capital, and for other purposes.

In the list of parliamentary notices relating to the supply of gas there is one given by the Birmingham Company for a Bill to extend their district beyond the borough to a distance of five miles from the town-hall, thus entering into competition with the Birmingham and Staffordshire Company in districts where they have hitherto had the exclusive supply. The motive of the Birmingham Company for attempting to extend their district beyond the limits of the borough is, we believe, the prejudicial effect to them of the present arrangement. It is asserted that, according to existing practice, the consumption of gas by persons who have private residences beyond the borough, in the Birmingham and Staffordshire Company's district, is added to their consumption of gas in premises within the town, when supplied by that company; the effect of which, in many cases, is to bring the joint consumption under the operation of the sliding-scale, and reduce the charge below what it would be were the accounts kept separate. It is to the advantage, therefore, of residents beyond the borough to take their supply of gas from the company that supplies them within the borough, and it is alleged by the Birmingham Company that many of their customers in the town have by this means been induced to leave them and to take their supply of gas from the other company, because they make an equalized charge at the lowest price. We know nothing of the merits of the respective cases, and merely repeat the rumours of the reasons assigned for this somewhat unusual proceeding.

The Dundee Gas Commissioners entered into possession of the works of the Dundee Gaslight Company and of the Dundee New Gas Company on the 11th inst., in accordance with the provisions of the Dundee Gas Act of last session. Mr. M'Crae, the former manager, continues in office as manager of the gas-works for the commissioners.

It is understood that Mr. Carter, the accountant appointed by the Court of Quarter Sessions for the county of Staffordshire to investigate the accounts of the Wolverhampton Gas Company, has made his report, but that it will not be published till it has been laid before the court in January next.

The hearing of the appeals of the Cambridge Town and University Gas Company and of the Cambridge Gas Consumers Company, Limited, against the judgment of Vice-Chancellor Malins, commenced yesterday before the Lords Justices, and is expected to last for several days.

It is our mournful duty to record the sudden death of J. E Johnson, Esq., the chairman of the Phœnix Gas Company, under peculiarly affecting circumstances. Mr. Johnson, who had recently removed from his residence at the Bridewell Hospital, in Bridge Street, Blackfriars, to Russell Square, attended the morning service at the Foundling Hospital on the 15th inst., and was holding the plate to receive the contributions of the congregation, when a friend stopped to congratulate him on his change of residence, and expressed the hope that he might live for many years to enjoy it, to which Mr. Johnson replied that at his time of life he could scarcely expect to live many years. The words were scarcely out of his lips when he fell lifeless. Mr. Johnson filled for some years the office of chairman of the Surrey sessions. He was respected by every one who had the pleasure of his acquaintance, and was held in high estimation by the public for his sterling integrity and genial amiability.

Register of New Patents.

427.—Peter Rothwell, of Hampstead Road, in the co. of Middlesex, gas engineer, for "*An improved regulating-valve for the delivery of specific quantities of gas, water, or other fluids.*" Patent dated Feb. 8, 1868.

This invention is intended to be used in connexion with an ordinary tap or valve, and is for the purpose of regulating the specific quantity of gas, water, or other fluid which passes through the tap or valve, even though the latter should always be opened to its fullest extent. The improved regulating-valve consists mainly of a conical plug fitted in a conical seat in a chamber, which is bored throughout, and fitted between the delivery-pipe and the ordinary tap, or in some cases beyond the latter. The plug is provided with a flange having its outer edge milled, by means of which it can be turned round on its axis in the seat (or, if preferred, it may be turned round by means of a lever or handle, or formed like a nut and turned by a key). The plug is bored partially from each end, but these holes do not meet, so that there is no communication through the centre of the plug. At the bottom of each hole is drilled a hole at right angles, or nearly so, to the former, and leading out through the side of the plug, so that both the passages from the ends of the plug open out at the same side of the plug and near to each other. A small portion of the metal between these two openings is then to be removed, so as at all times to leave a slight communication between the two passages. The conical seat fits closely to the plug excepting at one place, where a recess is cut in the former in such a manner and of such a form that when the openings in the plug are opposite to the recess the full amount of gas or other fluid can pass from one opening in the plug to the other, but when the latter is slightly turned the amount passing through is diminished accordingly. When the plug is turned further, so that the openings do not come opposite to the recess, then the gas or other fluid can only pass through the slight communication above mentioned, and hence only the smallest quantity passes through the valve. Thus it will be seen that by opening or closing this valve more or less a continuous supply of any specific quantity can be delivered, notwithstanding that the ordinary tap may be opened to its fullest extent.

It will be evident that instead of the seat being a fixture, and the conical plug capable of being turned therein as above described, the latter may be fixed and the former made so as to turn thereon.

It will also be understood that the same effect may be produced by forming channels or grooves in the working surfaces of taps or valves of any other form, the valve or tap so channelled or grooved being used as a regulating-valve or tap only, and employed in connexion with a stop-valve or tap of the ordinary form.

452.—Herrmann Schlotter, of Köstritz, near Gera, in the principality of Reuss, Germany, for "*An improved method of and apparatus for raising water.*" Patent dated Feb. 10, 1868.

This improved method of raising water consists in the employment of apparatus composed of a cylindrical or conical tube or series of cylindrical or conical tubes, the lower open end or ends of which is or are always below the level of the water or liquid to be raised, while the upper end or ends is or are furnished with an air-tight vale, which may be either acted upon by any known mechanical movement, or may be made to play freely, and an alternate vertical up-and-down motion being imparted to the said tube or tubes in order to raise water or other liquids in the manner set forth.

465.—Arthur Brin, of 11, Rue des Acacias, Paris, France, civil engineer, for "*Certain improvements in apparatus for generating and applying gas from air and hydrocarbon fluids for lighting and heating purposes.*" Patent dated Feb. 11, 1868.

The essences and ethers arising from the distillation of the oils of petroleum and schist from tar and volatile hydrocarbons generally have the property of emitting, in contact with air, vapours which if lighted produce flames of great lighting and heating intensity. This natural transformation of the essences into inflammable vapours has already given the idea of utilizing them to form a gas of more simple and economical production than ordinary gas obtained from coal. Thus a gaseous vapour has been produced by forcing a current of air through a vessel containing sponge or other porous material impregnated with the essences or volatile oils; but this carburation of the air has hitherto not produced satisfactory results, owing to the imperfections of the apparatus employed, which have not been adapted for the regular production of gas or for the prevention of accidental explosion.

This invention consists in improvements in apparatus for the production and application of gaseous vapour by the carburation of air by means of mineral essences and ethers, light oils, and other liquid hydrocarburets.

The main feature or principle of the apparatus is the combination of a constant and continuous feed in drops with regular and automatic distribution of the volatile liquid, with the object of producing without danger with its vapours and with air a current of gaseous mixture capable of burning at a determined number of orifices with a uniform development of light and heat. For the purposes a generator of peculiar action is constructed, which is applied to the different apparatus for lighting and heating. This generator may be arranged in two ways, one of which allows of a very precise and very delicate regulation of the feed. The air to be carburetted is sent into the generator by any suitable means, but preferably by a fan worked by clockwork or otherwise.

471.—Henry Stracey Barron, of 2, Alexandra Terrace, Barking Road, of West Ham, in the co. of Essex, mechanical draughtsman, for "*Improvements in double-action reciprocating pumps, by which the usual suction and delivery valves are dispensed with, and their functions performed by means of a sliding action of the barrel.*" Provisional protection only obtained. Dated Feb. 12, 1868.

According to this invention a piston is employed to which a determinate reciprocating action is given by any prime mover, and which works in a barrel having open ends, and furnished with a series of circumferential openings at a certain distance from either end. This barrel is also susceptible of a reciprocating action within another and outer barrel, which it is made to fit accurately, and eccentric with that portion on which the piston works; at either end of this outer barrel are two series of circumferential openings in communication with the suction and delivery pipes respectively, and corresponding in length with those already referred to in the said inner barrel.

482.—JOHN TOWLE, of Cold Harbour, near Oxford, in the co. of Berks, justice of the peace, for "*Improvements in the arrangement of sewers and drains for the collection and distribution of sewage matters.*" Provisional protection only obtained. Dated Feb. 12, 1868.

According to this invention it is proposed to carry off the storm waters of towns by means of a separate small barrel drain, or pipes of suitable material and size, according to circumstances, laid under the present rain-water gutters, close to the kerb of the footpath, one on each side of the way, except the street be a narrow one. These drains are to be laid as shallow as possible, so as to be safe from injury by carriage-wheels, and for the obtaining of one uniform fall.

484.—WILLIAM GEORGE HENRY TAUNTON, of Liverpool, in the co. of Lancaster, engineer, for "*Improvements in the construction of pumps and in mechanism employed in working the same.*" Provisional protection only obtained. Dated Feb. 13, 1868.

Within the head of the pump, which can be cast in one piece, or otherwise constructed, as desired, is formed an annular space closed at the bottom, in which there is caused to reciprocate vertically the free end of a hollow cylindrical bucket, to which the spear rod or rods is or are attached. The said hollow cylindrical bucket is fitted with a valve on its closed or upper end, which is free to open outwards, and is provided with a packing-ring or packing-rings to bear against one or both of the metal surfaces of the annular space. The passage or way through which the liquid is lifted is encircled by the annular space, and the bottom box is lifted on or near the top of the said passage or way. To reduce the friction of the water against the internal surfaces of the pump to a minimum, the suction-pipe is carried upwards in a straight line into the passage or way. Pumps now in use can be altered and adjusted in accordance with this invention by fitting within the working barrels thereof a hollow cylindrical or tapering piece with the bottom valve therein, and securing a hollow cylindrical bucket, packed preferably on its outer surface, to the ordinary spear-rod.

485.—RICHARD GEORGE, of Kilburn, in the co. of Middlesex, for "*Improvements in gas-stoves for heating and ventilating.*" Patent dated Feb. 13, 1868.

This invention relates to improved arrangements in the mode of admitting air to, and in carrying off the products of combustion from, gas-stoves, and also in the arrangement and construction of such stoves for heating and ventilating apartments or buildings. For this purpose it is preferred to construct the chamber or body of a stove of thin sheet metal, access being had to the burner or burners by means of a door which can be closed so as to exclude the atmosphere from entering the stove, except through the air-supply pipe. The air for supporting combustion enters the lower part of the stove by means of a pipe in communication with a chimney flue or pipe, which is also connected by a pipe with the upper part of the stove to carry off the products of combustion. The combined inlet and outlet pipe may be so arranged as to transmit heat to the part of the apartment or building through which it is conducted. Diaphragms are by preference arranged in the upper and lower ends of the stove, to distribute the air and products of combustion within the chamber. The door or other part of the body of the stove may be arranged to transmit light through glass or mica panels, if desired.

504.—JAMES ALLISON HOGG, of 14, Montague Street, Edinburgh, in the co. of Edinburghshire, for "*Improving gas-burners.*" Provisional protection only obtained. Dated Feb. 15, 1868.

It is found that when the flame from an ordinary gas-jet is made to impinge in a certain manner upon a bar composed for the most part of iridium, a much more perfect combustion of the gas is caused, attended with a great increase in its illuminating power. In accordance with this fact a gas-burner is constructed in which the flame is caused to strike against a flat bar or plate of the aforesaid iridium alloy, or other suitable metal. The manner in which the invention is carried out is to erect, by a suitable support, a small plate of the aforesaid metal so that it shall stand in the same vertical direction as the axis of the burner, by which more oxygen from the atmosphere is admitted to the centre of the flame, and is consequently attended with a more perfect combustion of the gas.

510.—WILLIAM JOHN BENNETT, of Little Smith Street, Westminster, manager, and JOHN JOBSON, of Vauxhall Bridge Road, in the co. of Middlesex, builder, for "*Improved apparatus for separating the solid and watery particles of slop and sewage.*" Provisional protection only obtained. Dated Feb. 15, 1868.

According to this invention it is proposed, at a suitable level with respect to the adjacent road level, to construct two or more rectangular tanks, of any required dimensions, to receive the slop direct from the scavengers carts. These tanks are built side by side or end to end, a space between allowing free access for workmen all round the tanks. These tanks are built of bricks so laid that the walls will present a reticulated appearance from top to bottom, or nearly so. These tanks are surrounded with a solid wall, and there is thus formed around and between the tanks passages of a depth equal to that of the reticulated walls, and of a width sufficient to make it accessible at all parts to workmen. These passages are intended to form channels for or receivers of the filtering water, and they are covered with York paving or otherwise, and their floor sunk below the level of the tanks to facilitate the deposit of sediment therein. In order to strengthen the walls of the tanks brick arches are thrown at intervals from the solid to the reticulated walls. Inside the tanks a filtering substance is applied, composed by preference of hurdles enclosing a layer of straw, and forming therewith a porous lining to the sides and ends of the tanks. The channels or water-receivers are connected with a surrounding or adjacent water-main by means of branch-pipes leading from the channels and passing through the walls of solid brickwork; and the water-mains are connected with a water-tank, from which a pipe will lead off the water to the main-sewer or other receptacle.

545.—JOHN KIRKLAND, of Liverpool, in the co. of Lancaster, engineer, for "*Improvements in the construction of pumps.*" Patent dated Feb. 19, 1868.

This invention consists, first, in placing the suction and discharge valves on the same spindle or rod, the distance between them corresponding to the distance between their respective seatings. The said seatings are formed in a valve-chamber communicating with the suction pipe or pipes and the working barrel. The suction-valve is made smaller than the discharge-valve, or part of the discharge-valve seating is moveable, so that the spindle and both of the valves can be easily withdrawn in one piece.

This invention consists, secondly, in the employment of a chamber in communication with the working barrel, from which two or more suction-pipes are led away to any desired places or place. The said chamber or the upper ends of the suction-pipes is or are fitted with valves or plugs attached to stems or otherwise, so that communication can be established or cut off between any place or places at pleasure. These valves or plugs are rendered easily accessible by providing the said chamber with a removable or lifting cover.

554.—GEORGE POMEROY DODGE, of 79, Upper Thames Street, in the City of London, india-rubber manufacturer, for "*Improvements in the manufacture of india-rubber valves, valve-seats, and other similar articles.*" Provisional protection only obtained. Dated Feb. 19, 1868.

This invention relates more especially to valves for steam-engines and pumps, and consists in manufacturing such valves, or sheets from which the same are to be cut, of india-rubber with an interior web of elastic woven fabric.

555.—GEORGE POMEROY DODGE, of 79, Upper Thames Street, in the City of London, india-rubber manufacturer, for "*Improvements in packing for the stuffing-boxes of steam-engines, and for other like purposes.*" Provisional protection only obtained. Dated Feb. 19, 1868.

This invention relates to elastic packing, consisting of india-rubber combined with fibrous material, either with or without an elastic core, which packing is usually manufactured by rolling or twisting hemp, jute, or other fibrous material or woven fabric into ropes or strands of suitable diameter. The improved packing is formed substantially in the manner above described, but instead of the exterior of such ropes or strands being finished with the hemp, jute, or other cheap material forming the body of the packing, there is put on over the same a coating of good sound cotton, canvas, or duck. By this means all the advantages of a steam packing made entirely of cotton, canvas, or duck are obtained at a cost not greatly exceeding that of ordinary packing formed entirely of hemp, jute, or other similarly cheap material.

557.—JAMES GRAFTON JONES, of the Blaina Iron-Works, near Newport, in the co. of Monmouth, for "*Improvements in machinery for exhausting air, suitable to be used for ventilating mines, and for other similar purposes.*" Patent dated Feb. 19, 1868.

These improvements consist in constructing a casing which is mounted on a central axis, and around the axis, on one or on both sides, are apertures for the passage into the casing of the air from the mine or other place to be exhausted. The casing has two or more hollow arms formed upon it, which spring from the central portion of the casing approximately in a radial direction opposite to that in which the casing is driven; the end of the arm is open, and forms the exit for the exhaust air from the mine or other place. On the leading or convex side of each arm there is formed a hood to take in air; it has a wide open mouth, which receives the air standing in its course as the hood is carried round with the other parts of the casing. From the mouth the air-passage in the hood gradually diminished in area in passing outwards along the arm until at some distance from the outer end of the arm the hood opens into the exhaust air-passage in the arm, and the air taken in by the hood consequently enters this passage, and acts as a blast to urge forward the current of air issuing from the mine or other place through the arm. When the apparatus is required to work under varying conditions, it is desirable that the plate which separates the exhaust air-passage in the arm from the blast passage in the hood should be made adjustable.

566.—PIERRE NICOLAS GOUX, of 49, Rue de Longchamps, Paris, in the empire of France, agricultural proprietor, for "*Improvements in collecting and in disinfecting human excreta and converting the same into manure; also in the apparatus or means employed therein.*" Patent dated Feb. 20, 1868.

The apparatus employed is not described apart from the drawings attached to the specification.

572.—GEORGE DAVIES, of 1, Serle Street, Lincoln's Inn, in the co. of Middlesex, and 87, St. Vincent Street, in the city of Glasgow, civil engineer and patent agent, for "*Improvements in taps.*" A communication. Provisional protection only obtained. Dated Feb. 20, 1868.

The object of these improvements is to retard the closing of taps of any construction, so as to prevent the shock or concussion in the pipe which is caused by the velocity of the water when the flow is suddenly stopped. This result is obtained in two ways. First, by applying to the tap a pneumatic piston or diaphragm, connected with the closing movement of the tap in such a manner as to tend to create a vacuum behind the piston and thus retard the closing of the tap; and, second, in applying a "cataract" valve in like manner, so as to increase the length of time occupied in closing the tap for the same purpose.

576.—GEORGE DAVIES, of 1, Serle Street, Lincoln's Inn, in the co. of Middlesex, and 87, St. Vincent Street, in the city of Glasgow, civil engineer and patent agent, for "*Improvements in the manufacture of gas for lighting and heating.*" A communication. Provisional protection only obtained. Dated Feb. 21, 1868.

This invention relates to the decarburation of gas and the dehydrogenation of ammonia, from which it is evident that the process employed is precisely the reverse of those heretofore known and in use for the production of lighting or carburetted hydrogen gases. It consists in decomposing the gases by electricity, or by superheating either at the time of or after their production, and before or after their purification, either alone or with coke mixed with steam, or with coke only, or with any other matter capable of reducing them.

596.—Benjamin Edward Reina Newlands, F.C.S., of 4, Malvern Terrace, Charlton, in the co. of Kent, for "*Improvements in treating spent oxide of iron, or oxide of iron which has been used in gas-works or otherwise, to separate sulphur from sulphuretted hydrogen, and in the purification of sulphur obtained from such oxide of iron.*" Provisional protection only obtained. Feb. 22, 1868.

Sulphur can be dissolved out from spent oxide of iron by means of naphtha, mineral oils, benzole, or turpentine, but the use of such solvents generally leaves the oxide of iron in a state unfit for use in purifying gas, or otherwise again to separate sulphur from sulphuretted hydrogen. According to this invention it is fitted to be so re-used by washing it with bisulphide of carbon, and by this means the remaining naphtha, mineral oils, benzole, or turpentine is separated, and the oxide of iron left clean and fit for re-use. The bisulphide which the oxide absorbs by distillation is recovered. Where the oxide has been used for purifying coal gas after treating it as above described, it is washed with water, and a solution is obtained which is distilled with lime, the ammoniacal products, which are given off in an acid state, being collected. The washed oxide is further treated with lime and water to obtain ferrocyanide of calcium, which is either evaporated to obtain crystals, or to which is added carbonate of potash, which precipitates the lime, leaving ferrocyanide of potassium in solution, which is afterwards crystallized out.

611.—William Edward Newton, of 66, Chancery Lane, in the co. of Middlesex, civil engineer, for "*Improvements in the manufacture of illuminating gas.*" A communication. Patent dated Feb. 24, 1868.

In the ordinary process of gas manufacture the three principal products of coal are gas, coke, and coal tar. The amount of gas obtained from a ton of coal is, by the ordinary process, on an average, say, in round numbers, less than 10,000 cubic feet, whereas the products of a ton of coal may be made to yield double that amount. The small quantity of gas and the large quantity of other products by the ordinary process are due to the method usually employed in gas-making of subjecting the coal and its products to but one process. The lower the heat to which the coal is subjected the less the coke, left in the retorts; the greater the heat, the greater will be the weight of coke left in the retorts. The products of the low heat would be for the most part vapours, while the quantity of gas would be small, but of the very best illuminating power. Under a high heat the quantity of gas would be much larger than under the low heat, but of a very poor illuminating quality. It is, therefore, evident that in order to obtain a good illuminating gas and the full quantity that coal is capable of yielding, the process of subjecting the coal to distillation must be separated from the process of converting the products of distillation into illuminating gas.

The object of this invention is the construction and arrangement of a gas apparatus in such a manner as will accomplish this result, and the invention consists, firstly, in a process for manufacturing illuminating gas, which consists in distilling the coal at a low heat and converting the distillate and condensable products into gas in separate benches or retorts; also in a process of converting the volatile products or fluids given off from the first bench of retorts into gas by subjecting the distilled products to the different temperatures required to convert the same into gas; likewise in a novel construction and use of automatic seal-valves to be employed instead of the ordinary hydraulic main of gas-works.

Furthermore the invention consists in a peculiar manner of distributing the distilled products or fluids given off from the first bench of retorts equally to the several gas-producing retorts by means of certain traps and connexions; also in a manner of separating the gas generated in the second bench of retorts from such fluids as escape conversion into gas in these retorts, and of passing the gas thus generated into pipes leading to the gasholder while the fluids are conveyed directly into the third bench of retorts, where they are subjected to a higher heat to convert them into gas.

And, lastly, the invention consists in a combination of the whole into one complete gas-generating apparatus.

The patentee claims—

1. The process above described for manufacturing illuminating gas, and which consists in distilling the coal at a low heat and converting the distillate and condensable products into gas in separate benches or retorts as described.

2. Converting the volatile products or fluids given off from the first bench of retorts into gas by subjecting the distilled products to the different temperatures required to convert the same into gas.

3. The construction and use of the automatic seal-valves, which are employed for the same purpose and instead of the ordinary hydraulic main of gas-works, as above set forth.

4. Distributing the distilled products or fluids given off from the first bench of retorts equally to the several gas-producing retorts by means of the several traps and connexions, as above set forth.

5. Separating the gas generated in the second bench of retorts from such fluids as escape conversion into gas in these retorts, and passing the gas thus generated into pipes leading to the gasholder, while the fluids are conveyed directly into the third bench of retorts, where they are subjected to a higher heat necessary to convert the same into gas.

6. The combination of the whole gas-generating apparatus as herein set forth, whether the constructed apparatus be precisely in the form described or otherwise, if it produces substantially the same results.

613.—George Sinepi Dracopulo, of Cardiff, in the co. of Glamorgan, for "*A new apparatus for raising or forcing water, applicable to ships, mines, and other purposes.*" Provisional protection only obtained. Dated Feb. 24, 1868.

According to this invention it is proposed to operate the apparatus by the force or agency of compressed air derived from a force-pump of any suitable construction, such air-pump being placed and fixed on the deck of a ship, or at the surface of a mine, or in any other elevated position, according to the purpose to which the apparatus is to be applied. The apparatus consists of a metal tube closed at the top, and of any length and diameter required, at the bottom of which a reservoir is attached having a perforated base, or a funnel-shaped perforated base, through which the water enters into the receptacle when it is immersed in water at the bottom of a ship's hold, or elsewhere. Above this inlet of water a tube is brought from an air-pump or other machine for compressing air to a jacket or casing surrounding the receptacle, by which means the water is suddenly forced or expelled up the tube to the deck, and escapes by an exit-pipe, whence it is conveyed away. Another supply of water then rushes into the receptacle or reservoir, and it is in turn raised up the tube and carried off by the impetus or rush of air.

617.—Henry Defries, of the firm of Jonas Defries and Sons, of Houndsditch, in the City of London, manufacturer, for "*Improvements in the manufacture of opal or glass lamps and glass globes, chimneys, and shades of every description.*" Provisional protection only obtained. Dated Feb. 25, 1868.

Hitherto, glass or opal globes, having pillars or curved projections in their circumference, have been ornamented on these pillars only by cutting patterns or devices upon them after the manufacture of the globe. By this invention it is proposed to form any desired device or pattern in the mould, so that when the globe is made, whether by the blow-pipe or operating with a plunger, it will issue from the mould with its pillars already bearing whatever device or ornamentation may have been engraved in the mould, and the labour of cutting be dispensed with.

634.—George Tomlinson Bousfield, of Loughborough Park, Brixton, in the co. of Surrey, for "*Improvements in apparatus for raising and forcing water and for feeding steam-boilers.*" A communication. Patent dated Feb. 25, 1868.

The improved apparatus here referred to is not described apart from the drawings.

643.—Robert Laidlaw and John Thomson, both of Glasgow, in the co. of Lanark, N.B., engineers, for "*Improvements in apparatus for exhausting gas, for blowing air, for pumping or forcing liquids, and for measuring liquids.*" Patent dated Feb. 26, 1868.

This invention relates to the constructing of apparatus for exhausting gas, for blowing air, for pumping or forcing liquids, and for measuring liquids in an extremely simple manner, and so as to be maintained in order with the least possible trouble.

The improved apparatus comprises two cylindrical or partly cylindrical bosses, fixed on parallel shafts. These bosses revolve with their cylindrical surfaces in contact, the shafts being geared together by spur-wheels outside of the case in which the bosses are contained. The body of the case encompasses both bosses, the part round the lower boss fitting that boss, whilst the part round the other boss is of larger diameter than the boss, so as to leave an annular space round it. The upper boss has fixed or formed on it two (or it might be more) propelling-plates, each extending out radially from it, and bearing continually against the inside of the case, excepting when in the course of its revolution it comes to the space occupied by the other boss. When any one of the propelling-plates reaches the lower boss, that boss will have been turned by the gearing so as to bring round a groove or cavity with which it is formed, and the plate enters this groove and passes round in it until from the continuation of the motion it leaves it again on the other side. The case is provided with an inlet at one side, facing the line of contact of the two bosses, and an outlet is formed on the opposite side; these are equal, and, like the other parts of the apparatus, are symmetrically disposad, so that the bosses may be turned in either direction, and either opening be taken for the inlet. End covers are bolted to the body of the case, one of these being formed with sockets for the inner ends of the shafts, whilst the other is formed with stuffing-boxes for those shafts to pass through. When any convenient motive power is applied to turn one of the shafts, and with it the bosses, the propelling-plates force round the gas or liquid that is in front of them towards the outlet, whilst fresh quantities enter behind the plates and a continuous flow is kept up.

In one modification of the apparatus both bosses are formed with propelling-plates, whilst each boss is formed with grooves or cavities to receive the propelling-plates of the other boss when passing across. The body of the casing is modified to suit this arrangement. The shafts may be in the same horizontal plane with the inlet below and the outlet above (a convenient disposition for a pump for raising water), but the apparatus may also be made with the plane of the shafts in any position that may be convenient.

When the apparatus is applied for measuring a liquid, any convenient counting-gear with indicating-dials is arranged in connexion with one of the shafts or axles, and the liquid is allowed to pass through the apparatus, when it will cause the cylinders or bosses to revolve, and the number of their revolutions will be a measure of the quantity passing. If the liquid has no head or pressure it may be simultaneously drawn through and measured by applying power to one of the axles. In using the apparatus for exhausting, blowing, pumping, or forcing, the necessary power is applied to one of the axles to cause the two cylinders or bosses to revolve, when a continuous uniform flow will be produced.

648.—Frededick Lambe and Arthur Charles Sterry, both of Rotherhithe New Road, in the co. of Surrey, paraffin refiners, and

JOHN FORDRED, of Blackheath, in the co. of Kent, chemist, for "*Improvements in purifying hydrocarbon oils.*" Patent dated Feb. 26, 1868.

This invention relates to an improved and economical method of purifying petroleum or earth oil, and the oils obtained by the destructive distillation of various kinds of coal or shale, or peat, of lignite, of brown coal, or of bitumen, all the oils so obtained being known as hydrocarbon oils, and including the oils of low specific gravity and great volatility known commercially as spirit.

The first head of this invention consists in treating oils of the above description which have been refined or partially refined, first by the well-known sulphuric acid treatment, and then with a solution of glue, or other gelatinous or albuminous substance, or with flour or starch prepared with water or with milk. The solution of glue is made by dissolving 5 lbs. of glue in 60 gallons of water, and the gelatinous and albuminous equivalent solutions, as well as the mixture of flour and water, are brought to a strength equal to that of the solution of glue. The acid of the strength of the ordinary sulphuric acid of commerce, in the usual proportions, is added to and agitated with the oil in the usual manner, and after subsidence the oil is run off into another vessel, where the solution of glue or its equivalent is added to it in the proportion of one part of the solution to four parts of oil. This mixture is agitated mechanically, or by means of air from a forcing-pump; or, in the case of the heavy oils, by a jet of free steam. The light oils require in this operation to be at a temperature of 70° or 80° Fahr., but the heavier oils should be raised to a temperae ture of from 150° to 160° Fahr. After being well agitated the mixtur- is allowed to rest, and the impurities of the oil will subside with a solution of glue or other substance employed.

The second head of the invention consists in the employment of fuller's earth as a substantive mode of purifying hydrocarbon oils. To this end oil which has been refined is employed, either wholly or in part, and after or without being subjected to the treatment with glue, or its equivalent, as already described, about 12 per cent. by weight of fuller's earth in fine powder is added. The mixture is well agitated for about one hour, the temperature being raised to from 70° to 80° Fahr. in the case of the light oils, and to about 150° to 160° Fahr. in the case of the heavy oils. The mixture is then left at rest for the impurities to subside, and from these the clear oil may be drawn off. This treatment with fuller's earth may be repeated as frequently as may be found necessary.

658.—CHARLES CLEMENT WALKER and WILLIAM THOMAS WALKER, of Midland Iron-Works, Donnington, near Newport, Shropshire, engineers, for "*Improvements in centre-valves for gas-purifiers and other apparatus.*" Patent dated Feb. 27, 1868.

The improvements consist of a new mode of governing and regulating the motion of horizontal centre-valves used in gas-works, whereby their action is rendered more simple and certain.

The horizontal valve attached to the specification is entirely encased and shut in. It has a spindle passing through a stuffing-box to the exterior of the casing; upon this spindle a horizontal spur-wheel is fixed, to which motion is given by a pinion turned by a handle. The spur-wheel has a raised rim or portion of a rim upon and round its upper or under face or other part thereof, and in this rim slots or openings are made by which its motion is instantly stopped by a catch falling by its own gravity into the slot on the rim which comes opposite to the catch during its traverse. These slots are so made that they stop the motion of the valve directly it has reached the required position upon the horizontal partitions underneath. To work the valve a man has simply to press down the handle of the catch, which raises the weighted end out of the slot, and to turn the handle releasing the catch directly the slot has passed, and allowing the wheel to travel with the catch upon the upper surface of the rim until the next slot comes opposite, into which the catch falls as before, stopping the motion of the valve exactly where required.

The drawing attached to the specification shows the centre-valve as used to work four purifiers upon a gas-work working a quarter turn at a time, three of the purifiers being always in action, and one always out of action for changing; but it will be self-evident that this invention is equally applicable to valves for working more or less number of purifiers than four, and for horizontal valves of every description upon a gas-work, the working of the valve inside the casing being varied in any way by arranging the slots as required. Upon gas-works where these horizontal centre-valves are used it is a matter of the first necessity that the valves should be worked with ease, facility, and absolute certainty at any hour of the day, or in the darkest night without the aid of artificial light, by an ordinary workman.

The methods heretofore used have been always doubtful and uncertain in their action, causing foul gas to pass in large volumes while the workman has been adjusting and shifting the valve to get it exactly into its required position.

674.—JAMES GEORGE STIDDER, of Hanover Street, Long Acre, in the co. of Middlesex, engineer, for "*Improvements in water-closets, lavatories, and urinals, and in regulating supplies for same by water-valves.*" (Complete specification.) Patent dated Feb. 28, 1868.

This invention is not described apart from the drawings.

704.—HENRY WILSON, of Stockton-upon-Tees, in the co. of Durham, for "*Improvements in meters, valves, and cocks, for measuring, regulating, and discharging liquids, gases, or fluids.*" Provisional protection only obtained. Dated March 2, 1868.

These improvements have for their object the prevention of waste of fluids by an improved form of cock or valve for discharging the same; likewise an improved meter for measuring and registering the quantity discharged.

The first improvement consists in the construction of the cock or valve. The interior of the cock or valve is formed with a valve-face, on this face rests a valve with a spring attached, to hold it to the face or seating of the cock; the fluid to be discharged likewise presses against the valve, to assist in keeping it to the seating of the cock. The upper or lower part of the valve, as the case may be, is formed serrated; the spindle or lever which moves the valve is formed with a conical or wedge-shaped end to fit into the serrations of the valve. To open the valve the spindle or lever is turned slightly right or left, and the valve is pushed open by the conical end of the spindle working on the serrated top of the valve; to keep the valve open it is necessary to hold the lever, for as soon as the lever is let go the spring combined with the pressure of the fluid instantly closes the valve. To prevent concussion in the supply-pipe consequent on the instant closing of the valve, an air cushion is formed by extending the supply-pipe a short distance above the cock or valve.

The next improvement consists in the application of the valve already described in combination with an ordinary cock to a cistern or other air-tight vessel.

In the improvements for measuring or registering fluids a toothed rack is attached to the plunger or piston which works in the cistern already described, the said rack being geared to a pinion to which the index or registering wheels are attached; the fluid being admitted under the piston drives it to the top of the cistern or cylinder, and carries round the pinion which gives motion to the dial or index wheels. For the return or down-stroke of the piston a paul is provided, which is fixed, and slips over the ratchet or toothed wheel attached to the pinion without moving it, so that each double stroke of the piston indicates a given quantity. A catch or tappet is also attached to the piston-rod, which turns the lever attached to the cock or valve at the top and bottom of each stroke, thereby converting it into a self-acting meter of simple construction.

706.—WILLIAM ROLLO, of Dundee, in the co. of Forfar, N.B., for "*Improvements in the arrangement and construction of water-closets.*" Provisional protection only obtained. Dated March 2, 1868.

This invention consists in using an air-vessel of special construction, to which the branch-pipe from the water supply main-pipe is directly connected, and the necessity for using a tank or cistern situated at a higher level than the pan of the closet is avoided.

708.—WILLIAM EDWARD NEWTON, of 66, Chancery Lane, in the co. of Middlesex, civil engineer, for "*Improved apparatus for burning hydrocarbons for heating purposes.*" A communication. Provisional protection only obtained. Dated March 2, 1868.

The essential feature of this invention consists in supplying all or part of the air for combustion of the oil by blowing the air through the body of the liquid into a combustion-chamber. This chamber may be arranged immediately above the surface of the oil, and beneath the boiler or other object to be heated, and provided with a small chimney or exit flue for the smoke.

715.—CHARLES COCHRANE, of Woodside Iron-Works, near Dudley, in the co. of Worcester, for "*Improvements in valves or dampers for pipes, passages, or flues serving to conduct gases at high temperatures.*" Provisional protection only obtained. Dated March 3, 1868.

This invention has for its object so to construct valves or dampers, more particularly applicable to pipes for conveying hot blast at very high temperatures, that they shall effectually withstand the great heat of the blast in contact therewith when closed, while when open the valves shall be removed from immediate contact with the blast.

727.—GEORGE ANDERSON, of Northumberland Street, Strand, in the co. of Middlesex, gas engineer, for "*Improvements in apparatus for moulding and compressing substances for artificial fuel.*" Patent dated March 3, 1868.

The apparatus consists of a pug-mill, which is fixed in a horizontal position to a vertical standard carrying a spindle provided with suitable mixing and propelling arms for acting on the materials, the thrust journal of said spindle closing the end of the mill. The mill-spindle carries a pinion at its outer end, receiving motion from a pinion on an upper horizontal shaft mounted in bearings at the top of the standard, and driven direct from any source of power. This shaft is mounted across the mouth or hopper of the pug-mill, and is also provided with arms for mixing the materials as they are introduced. The horizontal shaft carries an eccentric at its front end, mounted in a frame fitted to work up and down on guides cast on the vertical standards. This frame carries the ram or plunger, which, by the action of the eccentric, is caused to enter successively a series of orifices or moulds in a rotating mould table fixed at the lower part of the vertical standard. The ram in descending compresses the materials, which are forced into the moulds by the action of the arms on the pug-mill spindle through a pipe or channel.

744.—WILLIAM KNOX STUART, of Glasgow, in the co. of Lanark, N.B., chemist, for "*Improvements in arrangements and apparatus for dealing with and utilizing sewage.*" Patent dated March 4, 1868.

According to this invention the solid and other matters in the sewage are separated in order to obtain these in a valuable and marketable condition, and the water is delivered in an unpolluted and pure, or nearly pure, condition either into a river, or for any use for which it may be found suitable. This system comprises the employing of a single main intercepting sewer or channel to convey the contents of a group of city sewers to a suburban establishment, whereat the separating and utilizing processes are to be conducted.

747.—GEORGE DAVIES, of 1, Searle Street, Lincoln's Inn, in the co. of Middlesex, and 87, St. Vincent Street, in the city of Glasgow, civil engineer and patent agent, for "*Improvements in the manufacture of gas for lighting and heating.*" A communication. Provisional protection only obtained. Dated March 4, 1868.

This invention relates to the decarburation of gas, the dehydrogenation of ammonia, and the desulphuration of hydrosulphuric acid, from which it is evident that the process employed is precisely the reverse of those heretofore known and in use for the production of lighting or carburetted hydrogen gases. It consists in decomposing the gases by electricity, or by superheating either at the time of or

after their production, and before or after their purification, either alone or with coke mixed with steam, or with coke only, or with iron, or with any other matter capable of reducing them.

770.—ALEXANDER MELVILLE CLARK, of 53, Chancery Lane, in the co. of Middlesex, mechanical draughtsman, for "*Improvements in steam-pumps.*" A communication. Patent dated March 5, 1868.

This invention relates to improvements in steam-pumps, direct acting, and applicable either as a feed-pump or as an hydraulic engine. In direct-acting hydraulic engines, in order to obtain the necessary vacuum, a condensing-chamber is employed, together with pumps to withdraw the mixture of air and water. According to these improvements the use of the air-pump and its accessories, or any other mechanical equivalent for the same purpose, is entirely dispensed with, the vacuum being obtained without any expenditure of power or of steam by means of a valve placed in communication with the suction-pipe of the pump.

802.—EDWARD CASPER, of 101, Cannon Street, in the City of London, merchant, for "*An improved apparatus for raising and forcing liquids, more especially designed for supplying water to steam-boilers.*" A communication. Provisional protection only obtained. Dated March 7, 1868.

This invention relates to an apparatus wherein water or other liquid is forced, by a current or blast of steam or other fluid, through a tube or passage into which the water or other liquid is admitted through an aperture or apertures at the sides of the said passage.

810.—AUGUSTUS FRASER BAIRD, of Pimlico, in the co. of Middlesex, lieutenant-colonel in the Bengal Staff Corps, for "*Improvements in earth-closets, applicable also to urinals.*" Patent dated March 9, 1868.

This invention has reference to improvements applicable to earth-closets, and is a further development of the invention by the present patentee, dated August 15, 1867 (No. 2351). As in the former arrangements, there is a hopper for supplying the earth to a shoot or valve or flap-box, and a weighted flap or valve working therein, whereby the deodorizing earth is supplied to the receptacle for excrementitious deposits; but in lieu of the arrangements for putting the closet into and out of action, described in the specification above referred to, the following arrangements are adopted:—The weighted flap or valve (which is to move on its pivots or axle having bearings in the shoot or valve-box) is made with its weighted portion at a right or other angle to the non-weighted portion, which latter has a part or projection thereof or therefrom so curved or formed that, being of sufficient size, it shall act as a flap or valve for closing the entrance from the hopper, leaving open the entrance from the shoot or valve-box to the receptacle for deposits, by which new arrangements the valve or flap itself can thus be provided with a cavity or portion into which the dry earth is to be received from the hopper, and discharged by the action of the mechanism into the receptacle for excrementitious deposits, and thus also act as a measure for measuring out a sufficient quantity of dry earth at each action, and no more. At the angle at back (though any other convenient position may be adopted) another smaller projection is provided, so that, by having a rod or rail attached to the seat of the closet by means of side pieces or portions of the seat (which is to be a moving seat, as in the arrangements formerly specified under the patent above referred to), such seat will cause the flap or valve to open the hopper to the shoot, and the shoot to the receptacle for deposits, as may be required.

817.—PHILIP FANCKES HALBARD, of Burton-on-Trent, in the co. of Stafford, for "*Improvements in stench-traps.*" Patent dated March 9, 1868.

In constructing traps to be used in streets at the mouths of the openings into the sewer, a grating is employed to cover over the opening, as is usual, and below this grating a funnel or pan is formed tapering downwards; the lower end of this pan dips into water contained in the basin or case of the trap. An outlet to the sewer, as is usual, is formed at one side of the basin or case of the trap, and, in order to prevent gases from the sewer passing back through this outlet and up through the pan and grating into the street, there is interposed between the bottom of the pan and the outlet two transverse partitions at a short distance apart from one another, the one nearest to the outlet passing downwards from the top of the basin or case of the trap, and projecting below the bottom of the outlet passage; and the other partition, which is nearest to the funnel or pan, passing upwards from the bottom of the basin or case to a level above the level of the bottom of the outlet-passage. By this arrangement three traps will be formed in one, and the water level in the trap next the funnel or pan leading downwards from the grating will be higher than in the trap next the outlet-passage. The partition nearest to the funnel or pan is made to slide into its place between the guides, so as to be readily removable for the purpose of cleaning the trap.

820.—WILLIAM BARNS KINSEY, of 92, Cannon Street, in the City of London, engineer, for "*Improvements in apparatus for carburetting or increasing the illuminating properties of coal gas.*" Patent dated March 10, 1868.

This invention relates to a peculiar construction and arrangement of apparatus generally known as a carburetter for increasing the illuminating properties of coal gas, whereby greater economy in the consumption of the carburetting liquid employed is effected, whilst at the same time the light is improved and smoke and disagreeable smell prevented.

According to this invention, one or more fixed horizontal diaphragms are placed in the carburetting vessel situate above the surface of the carburetting liquid, and upon the surface of this diaphragm or diaphragms is placed a layer of felt or other suitable absorbent material; from the under side of the said diaphragm or diaphragms, and in communication with the felt, there are suspended a number of cotton wicks which dip into the carburetting liquid below and supply it by capillary attraction to the felt, which is thus kept constantly and uniformly moist after it has been once thoroughly saturated.

In order to ensure the complete saturation of the felt, in the first instance on the upper diaphragm, a small gutter is made inside the filling-tube and opposite to the felt, the tube being perforated at that part. On pouring in the liquid a portion of it will collect in the gutter and be absorbed by the felt. The lower felt may be saturated in the same way, or by simply filling in the liquid till it rises sufficiently to come in contact with it. It is proposed to enclose the wicks which supply the carburetting liquid to the felt or other absorbent material on the diaphragm or diaphragms in tubes in order to prevent the liquid being taken up or absorbed by the felt on the lower diaphragm, when more than one is used, as it passes upwards; and also to prevent any escape of vapour into the gas chamber or chambers beyond that given off from the felt or other absorbent material by acting as hydraulic seals; they also prevent, when applied to the carburetters of railway carriages, the entangling of the wicks and the shaking of the liquid against the lower diaphragm, by which the saturation of the wicks and felt would be rendered less uniform. In the cavity or space above each of the fixed horizontal diaphragms there is disposed a single or double spiral or other serpentine or zig-zag diaphragm or partition, the upper edge of which may be soldered to the top of the vessel or horizontal diaphragm above, as the case may be, whilst its lower edge is pressed firmly down upon the felt or other absorbent material employed. As the gas only passes through the spiral or tortuous passage contained in the chamber or chambers above the diaphragm or diaphragms, and does not enter the chamber containing the carburetting liquid, it follows that the saturating surface remains uniform, and is not affected by the rising or falling of the fluid level of the said liquid.

In order to show the level of the liquid in the carburetter, a lever carrying a float is employed, which lever communicates by a wire passing through a tube with an indicating glass tube contained within a metal tube having a slit or opening along opposite sides, such metal tube being screwed into a socket on the top of the carburetter, or the float may be attached to the rod itself. A leather washer is interposed between the bottom of the metal tube and the socket, in order to maintain the joint vapour-tight; the glass tube may then be dropped into its place, and be held firmly down by another leather washer and screwed plug in the top of the metal tube.

824.—ROBERT MELDRUM, of Pittormie, Cupar, in the co. of Fife, N.B., for "*Improvements in apparatus for raising water.*" Provisional protection only obtained. Dated March 10, 1868.

This improved apparatus comprises a cylinder placed vertically, and having a piston working inside of it. Valved inlets and outlets for the water, like those of a common double-acting pump, are arranged in connexion with the space below the piston, whilst the steam from a boiler has access at intervals to the space above the piston by a valve worked by the piston-rod. The steam-valve is a simple sliding plate arranged in one side of a tube fixed to the top of the cylinder, and in which the piston-rod works, and a snug on the rod closes the valve when the piston reaches the bottom of its stroke, and opens it again on the piston reaching the top of its stroke. When the piston reaches the bottom of its stroke it uncovers a number of openings in the side of the cylinder, by which water from below the piston enters into the space above it, and the steam-valve being then shut the steam above the piston is immediately condensed, and a vacuum formed. The atmospheric pressure then causes the water to rise up the suction or inlet pipe, and to enter under and carry up the piston. On the piston reaching the top of its stroke the steam-valve is opened, and the steam entering causes the piston to descend, and to discharge the water below it, and it will also force the water up an ascension-pipe, provided for the purpose, to a height depending on its pressure. The water that gets above the piston, together with that due to the condensation of the steam, passes down through a tubular extension of the piston-rod. This tubular rod has a valve at the bottom opening downwards, and it works as a plunger in a pipe or barrel, and acts as a feed-pump for supplying water to the boiler, with which the requisite connexions are formed. The piston-rod is by preference continued out through a stuffing-box in the upper end of the apparatus, and is connected to a crank-shaft and fly-wheel, in order to render the motion steady and regular.

APPLICATIONS FOR LETTERS PATENT.

3366.—ARTHUR HENRY ROBINSON, of Clyde Road, in the co. of Dublin, engineer, for "*Improvements in cocks or taps.*" Nov. 6, 1868.

3383.—JOHN LEWTHWAITE, of Woburn Place, in the co. of Middlesex, for "*Improvements in apparatus for boring and working in rock, stone, or earth, applicable to sinking artesian and other wells, to mining, and other purposes.*" Nov. 7, 1868.

3392.—WILLIAM CORDEN, of Datchet, in the co. of Bucks, artist, for "*Improvements in lamp-globes or glasses.*" Nov. 7, 1868.

3399.—WILLIAM MORGAN BROWN, of 13, Rue Gaillon, Paris, in the empire of France, engineer, for "*Improvements in man-engines for raising water and lowering and raising men.*" A communication. Nov. 9, 1868.

3403.—HENRY LEONARD BENNISON, of Greenwich, in the co. of Kent, engineer, for "*Improved rotary engine and pump, to be driven by water or steam power.*" Nov. 10, 1868.

3407.—JOHN HENRY JOHNSON, of 47, Lincoln's Inn Fields, in the co. of Middlesex, gentleman, for "*A mode of and means for utilizing the waste heat of furnaces employed in the manufacture of coal gas.*" A communication. Nov. 10, 1868.

3457.—CHARLES JONES, of Ealing, in the co. of Middlesex, surveyor, for "*Improvements in the treatment of sewage.*" Nov. 13, 1868.

3463.—GEORGE JARVIS WORSSAM, of Wenlock Road, City Road, London, in the co. of Middlesex, engineer, for "*Obtaining motive power by water and air or gases.*" Nov. 14, 1868.

3464.—Robert Beckley, of Richmond, in the co. of Surrey, and James Joseph Hicks, of Hatton Garden, in the co. of Middlesex, for "*Improvements in means or apparatus for measuring and registering the quantities of flowing liquids, which invention may be used as a rain-gauge or as a liquid-meter, and for measuring the strength of liquor run off from a still or other apparatus or vessel.*" Nov. 14, 1868.

3477.—Henry Carter, of Manchester, in the co. of Lancaster, for "*An improved apparatus to be employed for exhibition purposes in connexion with gas-burners.*" Nov. 16, 1868.

3484.—Andrew M'Niel, of Tiverton, in the co. of Devon, engineer, and William Wheaton, of Exeter, in the same co., merchant, for "*An improved process for the manufacture of salts of ammonia from ammoniacal gas liquor.*" Nov. 16, 1868.

GRANTS OF PROVISIONAL PROTECTION.

2598.—Alexander Rollason, of 123, Pembroke Road, in the parish of Clifton, in the city and co. of Bristol, chemist, for "*Improvements in purifying coal gas and obtaining ammonia from coal-gas products.*" Aug. 20, 1868.

2932.—William Dunn, of 3, Hope Terrace, Newington Green, late of Little Cross Street, Islington, for "*An improved method of and means for connecting pipes, tubes, cocks, and other similar articles.*" Sept. 24, 1868.

3180.—Alexandre Desbonnet, of Brussels, in the kingdom of Belgium, for "*An improved lantern or lighting apparatus.*" Oct. 17, 1868.

3217.—John Joseph Parkes, of 17, London Street, Paddington, in the co. of Middlesex, gas engineer, for "*Improvements for making stoves for cooking and heating purposes by gas and other means.*" Oct. 21, 1868.

3230.—Marc Antoine François Mennons, of the firm of Mennons and Telescheff, of 96, Newgate Street, in the City of London, and 51, Rue de la Chaussée d'Antin, Paris, in the empire of France, home and foreign patent agents, for "*An improved engine for raising and forcing water.*" A communication. Oct. 22, 1868.

3260.—Henry Edward Newton, of 66, Chancery Lane, in the co. of Middlesex, civil engineer, for "*Improvements in steam-pumps.*" A communication. Oct. 24, 1868.

3314.—Henry Wallwork, of the city of Manchester, in the co. of Lancaster, ironfounder and engineer, for "*Improvements in taps or valves.*" Oct. 29, 1868.

3321.—Samuel Sharrock, of Liverpool, in the co. of Lancaster, engineer, for "*Improvements in lamp-posts.*" Oct. 30, 1868.

3324.—Julius Brönner, of Frankfort-on-the-Maine, in the kingdom of Prussia, manufacturer, for "*An improved construction and application of shades to gas-lights.*" Oct. 31, 1868.

3363.—Augustus Lea Bricknell, of Stratford-upon-Avon, in the co. of Warwick, for "*Improvements in apparatus applicable as a rotary engine-pump and water-meter.*" Nov. 5, 1868.

NOTICES TO PROCEED.

2159.—Thomas Jefferson Mayall, of Roxbury, Massachusetts, U.S.A., now of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, for "*Improvements in the manufacture of gas-tubing and other articles of india-rubber.*" July 8, 1868.

2185.—William Leckie Graham Wright, of the city of Glasgow, in the co. of Lanark, N.B., engineer, for "*Improvements in rotatory engines and pumps applicable to meters for measuring fluids.*" July 10, 1868.

2283.—Alfred Homfray, of Witley Lodge, Halesowen, in the co. of Worcester, gentleman, for "*Improvements in separating coal, cokes, and breezes from bats and other impurities, and in machinery or apparatus to be employed for that purpose, which improvements and machinery or apparatus may be applied to the separation of various other substances.*" July 20, 1868.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

2710.—Richard Fell and Davy Hammond, "*An improved apparatus for regulating the supply of water to tanks, water-butts, or cisterns; applicable also to other purposes.*" Oct. 20, 1865.

2719.—Isham Baggs, "*Improvements in the manufacture of inflammable gases, and in their application to useful purposes.*" Oct. 21, 1865.

2742.—William Snell, "*Improvements in hydrocarbon lamps.*" Oct. 24, 1865.

2745.—Hyde Bateman and Edward Gooch Garrard, "*Improvements in the construction of pumps for raising or forcing water or other liquids or fluids.*" Oct. 24, 1865.

2793.—Edward Meldrum, "*Improvements in the distillation of coal and shale, and in the apparatus employed therein.*" Oct. 30, 1865.

2808.—Henry Young Darracott Scott, "*Improvements in the treatment and deodorization of sewage water.*" Oct. 31, 1865.

2809.—Edwin Addison Phillips, "*Improvements in lanterns for burning coal oil, petroleum, and other hydrocarbon fluids.*" Nov. 1, 1865.

2893.—Edward Myers, "*Improvements in the arrangement and construction of wet gas-meters.*" Nov. 10, 1865.

Miscellaneous News.

Death of Dr. Hillier.—The melancholy death of Dr. Hillier, medical officer of health for St. Pancras, is announced. Dr. Hillier, who stood exceedingly high in his profession, and was honarary secretary of the Association of Metropolitan Medical Officers, has been ailing for some time, and had just obtained leave of absence to go on the Continent for six months to recruit his health. During the previous week he attended the funeral of a brother, who had been killed by an accident, which had such an effect upon him that he died on the 7th inst.

Proposed Testimonial to Mr. J. Blackburn.—The members of the British Association of Gas Managers have been invited to attend a meeting at the Charing Cross Hotel, on Wednesday next, at noon, to consider the propriety of presenting a testimonial to their very efficient secretary, Mr. Blackburn, who is about to leave England, having been appointed engineer-in-chief to the Oriental Gas Company.

Dr. Whitmore's Report on the Quality of the Gas supplied in St. Marylebone, in October, 1868:—

October.	Illuminating Power in Sperm Candles.			Mean Pressure in 10ths of an inch.		Mean Amount of Sulphur in 100 Cub. Ft.
	*Mean of 27 Observations.	Highest.	Lowest.	Highest.	Lowest.	
Imperial Co.'s gas . .	15·34	16·23	14·42	21·13	8·72	18·37
Chartered Co.'s common gas	14·59	15·30	12·78	25·80	11·07	19·52
Chartered Co.'s cannel gas	20·36	20·95	19·99	25·16	10·32	16·24

* Each observation consists of 10 readings of the photometer.

The mean illuminating power of the Imperial Company's gas has been very high during the month, amounting to no less than 15½ sperm candles, or about 28 per cent. in excess of what is required by the Act as it at present applies to this gas; once it exceeded 16 candles, but on no occasion did it fall below 14 candles; its pressure was fair, and, as regards impurities, the quantity of sulphur contained in each 100 feet did not exceed 18 grains. Traces of ammonia were generally present, but on no occasion was sulphuretted hydrogen detected. The common gas of the Chartered Company, which by the City Gas Act of the last session of Parliament is now required to give an illuminating power equal to 14 sperm candles of six to the pound, gave a mean light during the past month equal to 14½ candles, or rather more than 5 per cent. in excess of what is required by law; once only did it fall below the standard; while on seven occasions it was found to exceed 15 candles. Its pressure was uniformly good; on no occasion was sulphur found in excess; in this respect this gas has materially improved during the past month. The cannel gas gave a mean light equal to 20½ candles; on three occasions it fell below the standard; its pressure was good, and, in respect of purity, it was better than either of the other two gases, the mean quantity of sulphur contained in it not having exceeded 16 grains. In no instance was sulphuretted hydrogen detected in either of these two gases, but traces of ammonia were, as usual, present. The above results were obtained from the Imperial Company's gas, manufactured at their Fulham works, and from the common and cannel gas of the Chartered Company, manufactured at their works in Horseferry Road, Westminster.

Dr. Whitmore's Report on the Quality of the Water supplied in St. Marylebone, in October, 1868:—

October.	Total Solid Matter in degrees or grains per Imperial gallon.		* Loss by Incineration of Solid Matter in previous column.		Ammonia.
	Oct., 1867. 0°	Oct., 1868. 0°	Oct., 1867. 0°	Oct., 1868. 0°	0°
Distilled Water . . .					
West Middlesex water	16·97	18·16	0·60	0·72	—
Grand Junction water	17·68	19·04	0·68	0·80	—

* The loss by incineration represents the amount of organic and other volatile matters contained in an Imperial gallon (70,000 grains) of water.

Important to Local Boards of Health.—At the last audit of the accounts of the Wallasey Local Board by Mr. T. K. Roberts, the district auditor, that gentleman considered it his duty to make a surcharge against the board for the payment of certain amounts which in his judgment were an illegal expenditure. The items were, first, for a sum of £398 7s. 3d., representing payments for the preparation of parliamentary plans, &c. The second was for £38 2s., which included a subscription of £5 5s. to the Wallasey Infirmary, the rest being fines for smoke nuisances by their steamers on the river; and the third, £599 3s. 9d., the costs incurred by the local board in opposing a bill in Parliament promoted by the Mersey Docks and Harbour Board. These sums, forming an aggregate of £1035 13s., were surcharged on Mr. J. C. Boyd, chairman of the local board, and Mr. George B. Kerford, chairman of the Ferry Committee. Against these surcharges the local board appealed to the Home Secretary, the Right Hon. Gathorne Hardy. Some correspondence of considerable length has taken place on the subject, but we are now enabled to give the final decision of the right honourable gentleman, which has just been communicated to the board. With regard to the first sum of £398 7s. 3d., the Home Secretary states that although he considers the expenditure illegal, yet, under the circumstances, he remits it. As to the second, a sum of £38 2s., a payment illegally made by the board, the surcharge is confirmed, the board having on a previous occasion of surcharge under similar circumstances been warned that such expenditure must not be repeated. As to the third item, that of £599 3s. 9d., the Home Secretary directs that the amount should be forthwith submitted to a taxing master, in the same way as if it had not been paid, and the result of such taxation is directed to be forwarded to the Secretary of State, who will then be prepared to remit the surcharge, after the amount taxed off has been deducted, but the sum so taken off is still to remain as a surcharge. The right honourable gentleman, in conclusion, "impresses on the board the necessity of making every effort to keep down the general district-rate, and he cannot consider they have done so when they neglected so obviously prudent a course as not submitting a legal bill of costs to taxation." It will thus be observed that the pains, attention, and patience which the auditor has given to the examination of the voluminous and important accounts of the Wallasey Board has received the highest sanction in the country, as there is no appeal from the decision of the right honourable gentleman, the Home Secretary.

Conviction for Stealing Gas.—At the Warrington Borough Court, on Friday, the 13th inst., John Dunbobbin was brought up on remand, charged with stealing a quantity of coal gas the property of the Warrington Gaslight and Coke Company, on the 31st of October. Mr. J. F. Marsh, who appeared for the plaintiffs, said he hoped that the bench would take the case under the Criminal Justice Act, instead of sending the prisoner for trial. He would point out to the bench that, if that was a case such as was contemplated by the Legislature for the bench to decide, it served as an extreme case, and one that they should visit with the extreme penalty which was within their jurisdiction. The prisoner seemed to have read the clause, in which he calculated a fine would be imposed on him, and that he (prisoner) thought it

would pay him better than paying for the gas consumed. Mr. White read the depositions which were taken on Monday. On prisoner consenting to be tried there, Mr. Bretherton, his solicitor, said he was placed in a position of very great difficulty in addressing the bench in defence of the prisoner, but he hoped that, having regard to the prisoner's previous character, they would take as lenient a view of the case as they consistently could to the satisfaction of the gas company and the public at large. He was somewhat surprised that his friend, Mr. Marsh, should have taken advantage of the circumstances when the case had to be adjourned, to address to them the strong language against the prisoner which he had, and, if the case had been dealt with on a former occasion, he would not have had the opportunity of making the very strong appeal to them against that unfortunate man. He expected that with the usual fair way in which he conducted his cases, he would have contented himself with asking the clerk to read over the depositions without further comment. It was the first time that he had appeared before the bench, and before any other bench, on a criminal charge, and he had hitherto borne a character above suspicion and reproach; and he hoped that they would take those circumstances into their consideration, and deal with him as leniently as they could. He had hoped to see one of the railway officials present to speak of his character. He was a young man, married, and had three children. Fortunately for him they had decided to hear the case there, and not to commit him to take his trial at the sessions. If they would give him as lenient a punishment as lay in their power, a slight punishment to a man like him would be better than if they gave him a severe one. Through a fellow-clerk the prisoner had got into difficulties, being bail for him, and since then he has had a considerable portion to pay back of the money which he had borrowed. Through that he had been tempted to try and reduce his gas accounts. Only on one occasion was the pipe found to have been disconnected from the service-pipe. From the 21st of October to the 31st of the same month there had been only 300 feet of gas consumed, which would be about the ordinary quantity for four burners. He asked their worships to deal as leniently as they could, and to inflict a slight punishment, which would be a warning through life to him. The bench then retired, and in a quarter of an hour returned, when Mr. Bleckly said it was not their wish to aggravate the punishment by any observations, but they thought, under the circumstances of the case, after a very careful consideration, they could not do less than sentence him to six weeks' imprisonment.

Share List of Metropolitan Gas Companies.

Number of Shares issued.	Amount per Share.	Name of Company.	Amount paid up p. Share.	Dividend p. Cent. p. Annum.	Price per Share.
	£		£ s. d.	£ s. d.	£
8000	10	Anglo-Romano	10 0 0	10 0 0	11 — 12
5000	20	Bahia (Limited)	20 0 0	3 0 0	14 — 15
1000	20	Do., preference	20 0 0	10 0 0	20 — 22
750	20	Do., do., redeemable	20 0 0	10 0 0	20 — 21
40000	5	Bombay (Limited)	5 0 0	4 10 0	4 — 4¼
10000	5	Do., third issue	4 0 0	4 10 0	3 — 3¼
10000	20	British (Limited) (Norwich, Hull-Sculcoates, Hanley, Tunstall & Shelton [Potteries], Trowbridge, & Holywell.)	20 0 0	10 0 0	29¾ — 30¼
12000	50	*Chartered*	50 0 0	7 0 0	56 — 57
6000	50	Do.	45 0 0	7 0 0	49 — 50
10000	20	*City of London*, A shares	20 0 0	9 0 0	25 — 26
10000	10	Do., B shares	10 0 0	4 0 0	6 — 7
9629	10	Do., new shares	10 0 0	9 0 0	12 — 13
25000	25	City of Moscow (Limited)	25 0 0	nil.	2¼ — 3¼
17490	25	*Commercial*	25 0 0	10 0 0	36 — 38
20000	20	Continental Union	20 0 0	4 0 0	17¾ — 18
10000	20	Do., preference	20 0 0	7 0 0	20 — 20¼
5000	10	*Crystal Palace District*	10 0 0	10 0 0	14 — 15
5000	10	Do., preference	10 0 0	6 0 0	12¾ — 13
10000	10	Do., new shares	2 10 0	7 0 0	2¾ — 3
4000	50	*Equitable*	50 0 0	10 0 0	69 — 71
4000	25	Do., new shares	25 0 0	10 0 0	34½ — 35½
23406	10	European (Limited)	10 0 0	11 0 0	15 — 15¼
12000	10	Do., new shares (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	5 0 0	11 0 0	7¼ — 7¾
20000	10	*Great Central Gas Consumers*	10 0 0	10 0 0	15 — 15½
5000	10	Hong Kong (Limited)	10 0 0	5 0 0	8 — 10
26000	50	*Imperial*	50 0 0	10 0 0	69 — 70
26000	10	Do., new shares	1 0 0	10 0 0	1¾ — 2
26000	12½	Do., new shares	3 0 0	7 0 0	4¼ — 4¾
1300	100	Do., bonds	£100	10 0 0	175 —180
28000	50	*Imperial Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la-Chapelle, Antwerp, Bordeaux, Brussels, Cologne, Frankfort-on-Maine, Haarlem, Stolberg, Toulouse, & Vienna.)	43 15 0	16 0 0	99¼—100

Number of Shares issued.	Amount per Share.	Name of Company.	Amount paid up p. Share.	Dividend p. Cent. p. Annum.	Price per Share.
	£		£ s. d.	£ s. d.	£
400	100	Imperial Mexican (Limited)	100 0 0	nil.	
200	100	Do., new	100 0 0	nil.	
3000	40	*Independent*	40 0 0	10 0 0	52 — 53
3000	10	Do.	10 0 0	5 0 0	7 — 9
3000	20	Do.	12 10 0	7 10 0	13 — 14
7133	50	*London*	50 0 0	10 0 0	71 — 73
5610	25	Do., 1st preference	25 0 0	6 0 0	26 — 28
503	50	Do., 2nd preference	50 0 0	6 0 0	
214	50	Do., 3rd preference	50 0 0	6 0 0	
£18781		Do., 1st preference stock		6 0 0	
£11828		Do., 2nd preference stock		5 0 0	
12000	5	Malta and Mediterranean (Limited)	5 0 0	5 0 0	3¼— 4
6000	5	Do., preference	5 0 0	7 0 0	.. — 5
30000	5	Oriental (Calcutta)	5 0 0	9 0 0	7¼— 7¾
30000	5	Do., new shares	1 0 0	9 0 0	1¼— 1¾
10000	5	Ottoman (Limited)	5 0 0	nil.	1¾— 2¼
10000	10	Pará (Limited)	10 0 0	6 0 0	8¼— 9
27000	20	*Phœnix*	20 0 0	10 0 0	29 — 30
3600	100	Do., new	35 0 0	7 10 0	37 — 38
144000	8k.	Do.	100 0 0	5 0 0	75 — 77
5000	20	*Ratcliff*	20 0 0	10 0 0	25 — 26
	20	Rio de Janeiro (Limited)	20 0 0	10 0 0	23 — 25
6959	5	Singapore (Limited)	5 0 0	4 0 0	
2000	5	Do., preference	5 0 0	7 10 0	
		Shanghai			
4500	50	*South Metropolitan*	50 0 0	10 0 0	73 — 75
	12½	Do., new shares	12 10 0	10 0 0	18 — 19
15000	10	*Surrey Consumers*	10 0 0	10 0 0	13¾— 14½
10000	10	Do., new	6 0 0	10 0 0	8 — 8½
9000	4	United General (Limerick)	4 0 0	5 0 0	2 — 2¼
10000	10	*Victoria Docks*	5 0 0	6 0 0	
1500	10	*Wandsworth and Putney*	10 0 0	10 0 0	10 — 12
2989	10	Do.	10 0 0	7 10 0	10 — 10¼
316	10	Do.	6 10 0	7 10 0	
1128	10	Do.	3 0 0	7 10 0	
20000	10	Western (Limited) A shares	10 0 0	10 0 0	14¼— 15
10000	10	Do., B shares	6 0 0	10 0 0	8 — 9
10000	10	Do., C shares	6 0 0	10 0 0	8 — 9
20000	10	Do., D shares	1 0 0	10 0 0	1¼— 2
8000	5	*West Ham*	5 0 0	7 10 0	.. — 7¼
6000	5	Do., new shares	5 0 0	7 10 0	.. — 7¼
551	10	West London Junction (Limited)	10 0 0	6 0 0	
520	10	Do., preference	10 0 0	6 0 0	

Price Current.

CASTINGS.—*Per Ton.*

Average Weight of Cast-iron Gas-pipes, per Yard.

1¼ inch.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lb

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle and Middlesboro'.	Wales.	Yorkshire, Derbyshire, and Staffordshire.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Pig Iron, No. 1 (g.m.b.)	3 15 0	2 14 0	2 6 6	3 10 0	3 12 6
1¼ and 2-inch Socket-pipes	7 0 0	5 15 0	5 10 0	6 0 0	7 0 0
2½ and 3-inch ditto	6 10 0	5 5 0	5 0 0	5 15 0	6 10 0
4 and 5-inch ditto	6 0 0	4 15 0	4 10 0	5 5 0	6 0 0
6 inches and upwards ditto	5 15 0	4 5 0	4 0 0	5 0 0	5 15 0
Retorts, 1st fusion, hot blast	5 10 0	4 10 0	4 5 0	5 0 0	5 10 0
Ditto, 2nd ditto, cold ditto	6 10 0	—	—	—	6 10 0
Tank-plates, ¼ thick and above	6 0 0	5 0 0	4 15 0	5 10 0	6 0 0

WROUGHT-IRON TUBING,

Subject to 50 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 12 feet—per foot	1 8	1 0	0 10	0 7	0 5	0 4½
Ditto ditto, from 6 inches to 18 inches—each	2 0	2 0	1 9	1 3	1 0	0 9
Connecting-pieces, or Long Screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, Springs, and Elbows (wrought iron)	3 0	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, ditto	4 6	3 0	2 6	2 0	1 6	1 2
Iron Cocks	17 6	9 6	7 6	4 6	3 3	2 6
Ditto, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Nipples	1 3	0 9	0 8	0 6	0 5	0 4
Plain Sockets	1 0	0 8	0 7	0 5	0 4	0 3
Syphons, 2-quart	15 0	14 0	13 6	13 0	12 0	—

GAS COALS.—*Per Ton.*

Newcastle.—Unscreened:—

Haswells, Nettlesworth Primrose, and South Pelaw	6s. 6d.
Felling, Framwell Gate, North Pelton, Redheugh Main, Walker's Primrose, West Wear, and Whitwell Primrose	6 9
Burnhope, Craghead, Charlaw, Derwent, East Castle, Edmondsley, Eighton Moor, Hartlepool Pelaw, Holmside, Lambton's Gas, Lanchester Pelaw, Medomsley, Mickley, New Pelaw, Pelaw Main, Ravensworth, Seaham, South Moor Pelton, South Leverson, Townley Main, Tyne Main, West Pelaw, Wearmouth Hutton, and Witton	7 0
Peareth, Ravensworth Pelaw, Waldridge, West Garesfield, and West Pelton	7 3
Brancepeth, Dean's Primrose, Londonderry Gas, New Pelton, Pelton, South Peareth, Stella, Urpeth, Washington Hutton, and West Leverson	7 6
Ramsay's Newcastle Cannel	15 0
Wigan Cannel (at Liverpool)	17 0
Scotch Cannel:—	
Boghead (at Leith)	42 6
Muirkirk	27 0
Kirkness, best (at Burntisland)	28 6
Capeldrae, 1st quality (at ditto)	28 6
Ditto, 2nd ditto (at ditto)	18 6
Cowdenbeath	12 0
Lesmahago (at Glasgow)	31 6
Ditto (at Granton)	32 6
Kraiston	27 6
Wemyss (f.o.b.)	22 6
Haywood, Wilsontown (at Granton)	23 0
Pirnie, or Methill	17 0
Lothian's Cannel (at Leith)	28 0
Myles' Cannel	23 6
Lochore Parrot (at Burntisland)	28 0
Lanemark (at Glasgow)	16 0
Elphinstone Tower (at Leith)	20 0
Coppa Cannel (on rails at Birkenhd.)	14 9
Ditto ditto (ditto at Connah's Quay)	14 3

FREIGHTS.

Coastwise—Newcastle.—Per Ton:—

Chatham and Rochester	5s. to 7 0
Cork	8s. 6d. to 9 0
Dover, Folkestne, & Ramsgate	6 6
Dublin	9s. to 9 6
Exeter Quay	8s. 6d. to 9 0
Ipswich	4 6
London (from Leith)	6s. 6d. to 9 0
London (Pool)	6s. 6d. to 7 0
Lowestoft and Yarmouth	4 6
Portsmouth & Southampton	7 6
Plymouth	8 0
Shoreham	7 0
Whitstable	6 0
Weymouth	8 0
Foreign.—Per Keel:—	
Barcelona	£17 0
Bordeaux	13 0
Boulogne and Calais	7 10
Cadiz	13 0
Cronstadt	—
Copenhagen	9 0
Genoa	16 10
Hamburg	10 0
Havre de Grace	9 6
Leghorn	16 10
Lisbon	11 0
Rotterdam	9 10
Stettin	8 10
Trieste	15 0
Venice	18 0

SUNDRIES.

Best Nstle. Fire-bks., p. 1000, £2 10s. to	£2 15 0
Cliff's Fire-bks. (at Wortley), p. 1000	2 15 6
Ingham's ditto (at Wortley), p. 1000	2 15 0
Farnley Iron Co.'s Fire-bks. (at Wortley), less discount	2 17 0
Fire-clay Retorts, p. ft. run, 5s. 6d. to	0 7 0
Tough Cake Copper, p. ton	74 0 0
English Pig Lead, p. ton	19 0 0
Welsh Bar Iron (in London), p. ton	9 10 0
Foreign Spelter, p. ton	20 12 6
English Block Tin, p. ton	103 0 0
Banca, p. ton	102 0 0
Tarred Rope Yarn, p. cwt.	1 0 0

C. A. S. VICKARY,

(ADMINISTRATRIX TO THE LATE JOHN VICKARY,)

GAS ENGINEER AND CONTRACTOR, IRON AND BRASS FOUNDER,

EXE ISLAND, EXETER,

Tenders her best thanks to the various Gas Companies in **England, Ireland, and Wales,** for the very liberal and kind support received by her lamented husband for the last **22 years,** during which period he erected and extended more than **200 Gas-Works.** She respectfully solicits a continuation of that support, and begs reference to the following testimonial:—

Plymouth and Stonehouse Gaslight Company.

Sir,—I have much pleasure in testifying that the 100-foot Telescope Gasholder and Cast-Iron Tank, erected by you for this Company in 1862, has given the highest satisfaction, and never required the slightest alteration or adjustment since its completion.

Mr. John Vickary. (Signed) PETER ADAMS, Chairman.

The late Mr. Vickary also erected a 100-foot Gasholder and Cast-Iron Tank at **Exeter;** an 80-foot Telescope Gasholder and Iron Tank at **Devonport;** a 90-foot at **Torquay,** &c., &c. At either of these works satisfactory references can be made.

C. A. S. V. begs particular attention to her **Improved Gas-Meters,** both **Wet and Dry,** the materials and workmanship of which are guaranteed of the very best description, and which have gained for her Meters so excellent a reputation.

RETORTS, DIP & ASCENSION PIPES, HYDRAULIC MAIN, CONDENSERS, PURIFIERS, STATION-METERS, GOVERNORS, VALVES, and GASHOLDERS,

Of any size, and every description of article required in Gas-Works supplied.

Mains, Tees, Connexions, and Syphons, from 2 to 12 in., always in stock, and supplied at Scotch prices.
Clay Retorts and Fire-Goods of every description.
Chandeliers and Gas-Fittings of the most modern designs.
Iron Pipe and Fittings, Service Cocks, &c.

Plans, Specifications, and Estimates for the Erection of New Gas-Works of any size furnished.

THE GAS-METER COMPANY

(LIMITED), LONDON,

(Successors to CROLL, RAIT, and CO., LONDON, and WEST and GREGSON, OLDHAM.)

MANUFACTURE

STATION-METERS & GOVERNORS

At their Oldham Establishment, which has long possessed the reputation of supplying this description of apparatus of the most perfect construction and appropriate design.

CONSUMERS GAS-METERS IN CAST-IRON & TINNED SHEET-IRON CASES.

STREET GOVERNORS, PRESSURE and EXHAUST REGISTERS, TEST GASHOLDERS,

AND EXPERIMENTAL GAS APPARATUS GENERALLY.

For information, &c., apply to

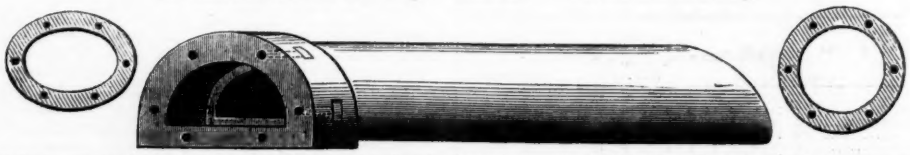
W. ARCHER, Manager, Meter Factory, OLDHAM;

OR TO

GEORGE RAIT, Managing Director, KINGSLAND ROAD, LONDON.

THE FARNLEY IRON COMPANY,

FARNLEY, near LEEDS,



In consequence of the increasing demand for their Retorts, have largely extended this branch of their Fire-Clay Works, and are now prepared to execute the most important orders, either for *home* or *export*, with great punctuality.

The Fire-Clay raised from the Farnley Estate (commonly called the Wortley bed) is unsurpassed by any other known in the district, and is peculiarly well adapted for Retorts, Gas-Ovens, and Fire-Bricks; and the F. I. Co. beg especially to invite those connected with Gas-Works, who have not yet used their Retorts, to be good enough to favour them with a trial.

The F. I. Co. generally hold in stock, for immediate supply, Fire-Bricks of every size and kind—Tiles, Sanitary Tubes, Ornamental Terra-Cotta Ware White Facing Bricks, the White, Buff and Salt-Glazed Bricks, &c., &c.

Prices, Drawings, and all other information may be obtained by applying as above, or to

MR. SUTTON, THE HULL STORES, 46½, QUEEN STREET, HULL.

ROBERT MACLAREN and CO., EGLINTON FOUNDRY, GLASGOW, Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent. General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

NATURAL HYDRATED OXIDE of IRON constantly on Sale. Apply to **MARTYN DENNIS AND CO.,** LIVERPOOL.

HOPKINS, GILKES, & CO., LIMITED, MIDDLESBOROUGH,

SUPPLY GAS AND WATER PIPES OF EVERY SIZE, Plain, Turned and Bored, and Coated.

CAST-IRON RETORTS.

Castings for Gas-Works of every description.

EXHAUSTERS.

LONDON OFFICE: 95, CANNON STREET.

CAST-IRON Retorts, Socket Pipes, with Syphons and all requisite Connexions, Lamp Columns, Wrought Iron Tubing, Valves, Street Lamps, Sight Holes, Furnace Doors, Ash Pans, Charging and Coke Shovels, Iron Pails and Coke Barrows, Cross Bars, Fire Pots, Pumps, Iron Borings.

PURIFIERS, CONDENSERS, and SCRUBBERS erected complete, or the materials supplied; with every description of goods in use by Gas-Works, in stock, on wholesale prices, at

Mr. LYNCH WHITE'S,
Old Barge Iron Wharf, Upper Ground Street, LONDON.

JOHN WRIGHT,

30, BROAD STREET, ISLINGTON, BIRMINGHAM,

MANUFACTURER OF

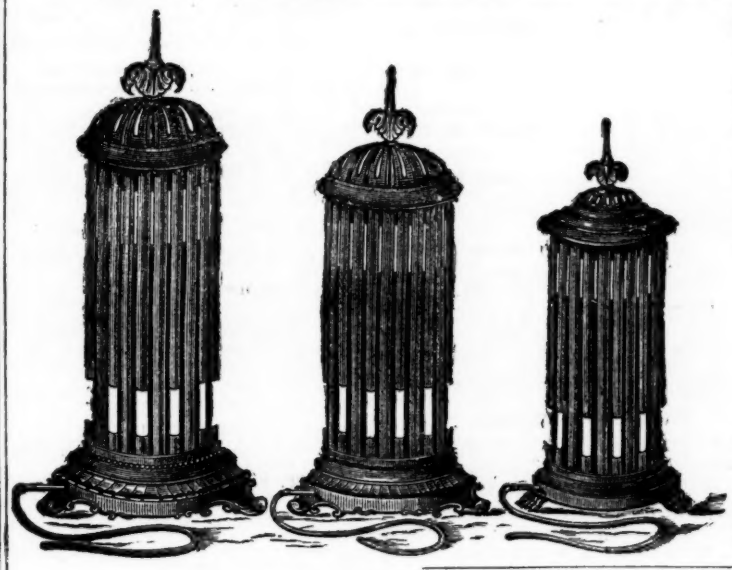
Registered Gas-Burners, by which £6 is saved in every £10 worth of Gas consumed;

Registered Radiating Gas-Stoves;
Registered Flat Irons;
Improved Atmospheric Gas-Stoves;
Gas Broilers, Toasters, and Roasters;

Improved Nursery Brackets;
Opal Reflectors;
Improved Smoke Consumers;
Glass Commode Knobs, &c., &c.

JOHN WRIGHT respectfully informs the trade that he supplies every article, either direct or through Merchants and Factors, at 32½ per cent. from List, except Gas-Burners, which are subject to 50 per cent. discount.

This REGISTERED RADIATING GAS-STOVE



Is constructed on scientific principles, and gives out great heat by the perfect combustion of a small quantity of Gas, avoiding both smell and smoke.

It can be fixed in any room by drawing the flexible Tube over the gas nipple of an ordinary burner, which supplies sufficient gas for the smallest size.

Where the Stove is required permanently, it is desirable to have a Cock and Nozzle inserted in the gas-pipe.

These can be supplied with the Stove, and are the only fittings required for even the largest size.

The following are distinguishing advantages of this Stove:—

It is portable, and can be removed from room to room or from one part of a room or office to another.
It is ornamental and effective.
It is cheap, both in first cost and in daily use.
It requires scarcely any fixing; and
There is POSITIVELY NO SMELL.

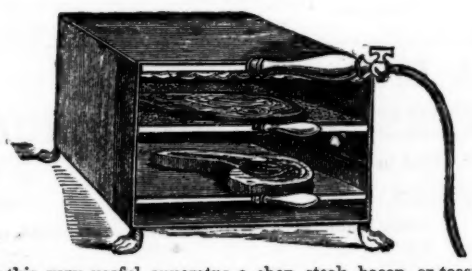
PRICES.

		s.	d.
No. 210 Stove, 21 in. high		12	6
„ 212 „ 26 in. „		17	6
„ 214 „ 32 in. „		25	0
„ 216 „ 40 in. „		42	0
„ 218 „ 48 in. „		63	0
Cock and Nozzle for ditto, extra		1	6
12 feet of Prepared Tube for ditto		4	0

Extract from the "ESSEX WEEKLY NEWS," of January 31st, 1868.

HEATING THE CHURCH WITH GAS.—On Friday, the 10th inst., a preliminary meeting was held at Thaxted, by the churchmen of the parish, for considering the expediency of heating the parish church with gas, and after a friendly discussion it was unanimously agreed that it should be done. This meeting was followed up by a second, which was held on Tuesday, the 14th inst., for the purpose of considering the plans and estimates of the proposed works. The Rev. G. E. Symonds, the esteemed vicar of the parish, took the chair, and Messrs. Joseph Scruby and Taylor Leeder, the churchwardens, and the principal parishioners were present. After minutely inspecting and fairly discussing the various plans and estimates submitted, the meeting selected those forwarded by Mr. O. E. Ratcliff, plumber and gas-fitter, of Thaxted, and that gentleman was appointed to execute the order for the whole of the works connected with the heating apparatus. *This consists of a simple yet admirable arrangement—twelve of WRIGHT'S REGISTERED RADIATING GAS-STOVES*, supplied by the eminent and well-known firm of Messrs. Hulett and Co., gas-fitters, &c., of London, have been erected. Four of these are in the nave, and four in each of the side-aisles. Each stove is three feet high, and of light and elegant proportions. The mains are laid under the pavement, and are of such proportions as to answer every requirement. The whole of the work was so far advanced as to admit of a preliminary trial on Thursday, the 23rd inst., which was very satisfactory. The works were completed on Saturday, and on Sunday last the church was heated for the first time by the new apparatus. There was not a single escape in any part of the works, and the congregation present confessed it a perfect success. The temperature was tested by a thermometer on Sunday morning before the gas was lighted, and was found to be 48 degrees, and at the commencement of the service the temperature had risen to 59 degrees, which was found to be very comfortable, and the gas was turned off from four stoves, and the other eight were turned very low. This church, it must be borne in mind, is unusually large and lofty, the interior dimensions being 166 feet long, by 70 feet in width, and 40 feet in height with a flat roof, yet, notwithstanding the many thousands cubic feet these figures comprehend, the temperature was easily kept up (as stated above) to 58 degrees, and was as warm and comfortable as a snug room. *The successful experiment of heating this large building goes much in favour of the stoves used, and we understand that all who use them, properly fixed, can find nothing better, and there is no smell after the stoves are seasoned.*

WRIGHT'S IMPROVED
GAS BROILER & TOASTER.



By this very useful apparatus a chop, steak, bacon, or toast, and even a fowl or small joint may be roasted more readily and economically than by any open fire.

The Gas being above the gridiron or pan, no taste of Gas is possible, and it is universally admitted that for Toasting, Broiling, or Roasting, reflection is the best method.

By the Cock the flame can be regulated to any required heat.

No. 1 . . . 12s. 6d. | No. 2 . . . 17s. 6d.

LACQUERED & BRONZED.

3½-inch . . .	1s. 4d. each.
4¼ „ . . .	1 6 „
4¾ „ . . .	1 9 „

If with Enamelled Top, White or Florentine, 6d. each extra.

TO GAS ENGINEERS & GAS COMPANIES.

A Practical Draughtsman will be disengaged shortly, and is desirous of a re-engagement, either as MANAGER or DRAUGHTSMAN. Has had five years experience. First-class references from present and past employers.
Address H. H. S., Gas-Works, HALIFAX.

A German Gas Engineer, who is well experienced in his trade, and knows very well the English, French, and Spanish languages, is looking for employment where knowledge of languages is necessary.
Communications to be addressed to Mr. EUGEN FORT, LEIPSIC.

WANTED, an appointment as INSPECTOR of METERS, or to manage a small work. Perfectly understands meter-fixing, laying services, mains, &c., and has had the collection for late employers.
Address A. B., 1, Greyhound Cottage, Lea Bridge Road, ESSEX, N.E.

TO GAS COMPANIES AND OTHERS.

WANTED, by a practical Engineer, aged 34 years, a situation as Engineer and Manager, Deputy Engineer, or Secretary. Has had long experience in management of gas-works. Good practical draughtsman, with first-class references.
Address L. M., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO GAS COMPANIES, ENGINEERS, &c.

WANTED, a re-engagement. The Advertiser is thoroughly and practically acquainted with all the details of gas engineering. He is a first-class draughtsman, and has had considerable experience in book-keeping, correspondence, estimating, and the management of workmen. Aged 29.
Address R. D. C., care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

TO GAS STOKERS.

WANTED, a steady, competent Man at the Gas-Works, St. Asaph, Rhyl.
Applications, with testimonials and wages expected, to be addressed to Mr. M. R. PARTINGTON, Secretary.

LEICESTER WATER-WORKS.

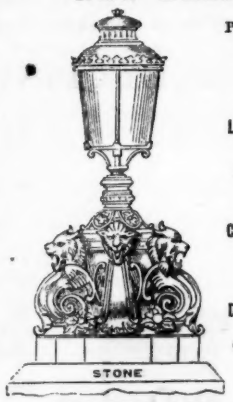
TO CONTRACTORS FOR RESERVOIRS, BUILDINGS, &c.

THE Directors of the Leicester Water-Works Company are prepared to receive TENDERS for the execution of the works comprised within the following Contracts, viz.:—
Contract No. 4.—Including the construction of a large Storeage Reservoir, Four Filter-Beds, a Pure Water Tank, a Cooling Pond, the Road Diversions, and other Works.
NOTE.—The earthwork in this Contract will probably amount to 300,000 cubic yards or upwards.
Contract No. 5.—Including the erection of an Engine and Boiler House, Chimney Tower, Cottage, and other Works.
The whole of the foregoing works will be situate near to Bradgate Park and the village of Cropston, and at a distance from the town of Leicester of about five miles.
Drawings, specifications, forms of tender, and schedules of quantities may be inspected at the Offices of the Company at Leicester, and at the Office of Messrs. Thomas and Charles Hawksley, Civil Engineers, 30, Great George Street, Westminster, S.W., on and after Monday, the 9th day of November next; and Tenders must be delivered at the Offices of the Company on or before Tuesday, the 8th day of December next.
The Directors do not pledge themselves to accept the lowest or other tender.—By order,
J. H. WILLIAMS, Secretary.
Water-Works Offices, Bowling Green Street, Leicester, Oct. 21, 1868.

GAS-WORKS FOR SALE, either attached to the freehold or for removal. Gasholder for 4500 ft., with cast-iron tank, and ornamental columns and framing; 5 Retorts and fittings complete; Condenser, 2 Purifiers and Washers, and 150-light Meter; set of 3 Barrel Pumps.
Application, personally or by letter, addressed to the SECRETARY, Hodges's Distillery Company, Limited, Church Street, Lambeth, LONDON.

EAST BARNET GAS AND WATER COMPANY.
(Incorporated by Act of Parliament.)
OFFICES—61, CHEAPSIDE, E.C., AND ALBERT ROAD, EAST BARNET, N.
NOTICE is hereby given that an EXTRAORDINARY GENERAL MEETING of the Proprietors of the Company will be held at the Board Room, on the Works, East Barnet, on WEDNESDAY, the 2nd day of December, 1868, at 12.30.
Business—To consider the adoption of the powers possessed by the Company's Act of Parliament for water supply throughout the district.
By order of the Board of Directors,
WM. C. HUMPHRYS, Secretary.
Nov. 16, 1868.
A train leaves King's Cross at 12.5 p.m.

TURNER & ALLEN'S
NEW DESIGNS
FOR
Plain & Ornamental
LAMP-POSTS,
DWARF
GAS PILLARS,
LAMP BRACKETS,
LAMPS,
LANTERNS, &c.



GASELIERS,
CORRIDOR AND LOBBY
LAMPS,
GARDEN
AND
DRINKING FOUNTAINS.

COMPLETE PATTERN AND PRICE BOOK, 3s. 6d. in stamps.

TURNER AND ALLEN,
Engineers, Founders, &c.,
201, UPPER THAMES STREET, LONDON, E.C.

LINTZ COLLIERY COMPANY.
FIRE-BRICK AND RETORT WORKS.

THE LINTZ COLLIERY COMPANY
Beg most respectfully to draw the attention of
GAS COMPANIES, FURNACE BUILDERS, FIRE-BRICK DEALERS, & OTHERS,
To the superiority of their
FIRE-CLAY GOODS,
Where resistance to heat is of paramount importance, an ample guarantee of which is in the fact of their extensive use by most of the Iron Manufacturers in the North of England.
Not only is the quality of the Fire-Clay inferior to none in the northern Coal-field, but the greatest care is taken in selecting it. It is all hand picked, and well weathered before use.
All orders for
FIRE-CLAY RETORTS of any shape or size, FIRE BRICKS, &c.,
Will meet with prompt attention.
LAYCOCK'S GARESFIELD COKE.
OFFICES: LINTZ COLLIERY, BURNOPFIELD, Co. DURHAM; AND QUAYSIDE, NEWCASTLE-ON-TYNE.

BIRTLEY IRON WORKS,
CHESTER-LE-STREET, DURHAM.
Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.
Warehouse in London for Cast-iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.
Office in London, Mr. E. M. PERKINS, 101, Cannon Street, E.C.

TO GASHOLDER MAKERS.

THE Directors of the Ormskirk Gas Company are prepared to receive TENDERS for the erection of a GASHOLDER, 50 ft. diameter by 18 ft. deep.
Plans and specification may be seen at the Office of the Company, Aughton Street, Ormskirk, or a copy obtained on payment of 10s.
Tenders, addressed to the Secretary of the Ormskirk Gas Company, and endorsed "Tender for Gasholder," must be sent on or before Wednesday, the 23rd of December next.
The Directors do not bind themselves to accept the lowest or any tender. JOHN MARTIN, Manager.
Gas-Works, Ormskirk, Nov. 10, 1868.

CANNEL COAL.—The West York-shire Iron and Coal Company, Limited, beg to draw the attention of Gas Companies to their Cannel, of which the following is the analysis made by W. Huggon, Esq., F.C.S.:—

Yield of gas per ton	10,296 cubic feet.
Illuminating power rather over	21 sperm candles.
Yield of coke per ton . . .	12 cwt.

The actual working, as reported by one of the largest gas companies in Yorkshire, gives results still more favourable, viz—

Yield of gas.	10,416 cubic feet.
Illuminating power . . .	21·89 sperm candles.
Coke	The same.

We add from the same source the capabilities of the common gas coal—

Yield of gas.	10,080 cubic feet.
Illuminating power . . .	14·41 sperm candles.
Yield of Coke	13 cwt.

COLLIERIES—WEST ARDSLEY, near LEEDS.
For further particulars, address to the Office of the Company, 15, York Place, LEEDS.

POPE & PEARSON'S GAS COAL.
We have now the authority of several of the most eminent Gas Engineers of London in stating that our Coal yields *in practical working over* 10,000 *cubic feet of gas, with an illuminating power of* 16 *candles.*
One ton yields 12½ cwt. of good coke. This Coal can be shipped from Hull, Goole, Liverpool, Morecambe, and Barrow.
For further particulars, apply to POPE AND PEARSON, West Riding and Silkstone Collieries, near LEEDS.

OLD WEMYSS CANNEL COAL.—Yield of gas per ton, 12,896 cubic feet; illuminating power, 31·75 standard candles. Port of shipment, Wemyss.
Analysis and price on application to Mr. WM. CAREY, Manager, Wemyss Colliery, Kirkcaldy, FIFE.

CANNEL COAL.

MESSRS. GRIFFITHS BROTHERS,
COPPA COLLIERY, MOLD,
Beg leave to call the attention of Gas Companies to the superior quality of their Cannel for gas-making purposes.
This Cannel produces in actual working, in iron retorts, 9200 cubic feet of 32-candle gas, and upwards of 11 cwt. of coke, and in clay retorts will produce 11,500 cubic feet of 25·9-candle gas.
Ports of shipment—Birkenhead or Connah's Quay.
Waggons supplied for delivery by railway to any part of England or Wales.
For particulars, prices, and rates of freight, apply to GRIFFITHS BROTHERS, Coppa Colliery, Mold, FLINTSHIRE.

SWANWICK CANNEL COAL.
Illuminating power 23·98 candles; yield large, and coke good.
Analyses by W. Valentin, Esq., of the Royal College of Chemistry, London, and William Fiddes, Esq., F.C.S., Gas-Works, Bristol, with price and terms, forwarded on application to H. BOAM, Head Office, 1, Darwin Terrace, DERBY.

TO GAS ENGINEERS AND FITTERS.

Every Description of
GAS LANTERNS & REFLECTOR LAMPS
For Shop Windows kept in Stock.
W. DAVIS, 17, Wells Street, Oxford Street, LONDON, W.
Established 1820.

Mr. H. GORE,
CONSULTING GAS ENGINEER,
20, ALFRED PLACE, BEDFORD SQUARE, LONDON, W.C.

FOR SALE,

SECOND-HAND STATION-METERS AND GOVERNORS,

As under, all in excellent Working Order, equal to New, guaranteed.

STATION-METERS.

1,500	Cubic Feet per hour,	4-in.	Connexions.	6,000	Cubic Feet per hour,	8-in.	Connexions.
2,000	,, ,,	4-in.	,,	8,000	,, ,,	8-in.	,,
5,000	,, ,,	8-in.	,,	12,000	,, ,,	10-in.	,,

STATION GOVERNORS for 2, 5, 6, and 12 inch Mains.

APPLY FOR FURTHER PARTICULARS TO

GEORGE RAIT, MANAGING DIRECTOR,

GAS-METER COMPANY, 238, KINGSLAND ROAD, LONDON, N.E.

EDGE'S AMERICAN PATENT METHOD
FOR
SCURFING RETORTS.

The above improved method having been found to be the most efficacious, expeditious, and economical of any plan at present employed for the removal of the Incrustation from the interior of Retorts, arrangements have been made with the Patentee for working the patent in this country. Particulars and Terms for Licences may be had on application to

E. GODDARD, GAS-WORKS, IPSWICH,

Where the process may be seen in full operation.

ECONOMY IN GAS PURIFICATION.

Mc DOUGALLS'

HYDRATED PEROXIDE OF IRON.

This Oxide is now well known, and has gained at a number of the largest gas-works at home and abroad a decided preference for efficiency and durability. It is free from any mixture of sawdust or other material, every particle being available for use, thus causing the Purifiers to work double the time before it requires renewing, and saves one-third the cost of labour in charging them. It readily takes up sulphur, revivifies rapidly, and lasts longer than any other Oxide in the market. Prices on application to—

Mc DOUGALL BROTHERS, Manufacturing Chemists,

LONDON—11, Arthur Street West, London Bridge, E.C.; MANCHESTER—Riga Street, Shudehill.

BEST AND HOLDEN'S

PATENTS FOR CHARGING AND DRAWING GAS-RETORTS,

WITH CHAMBERS FOR MOUTHS,

REQUIRING NO LUTING.

Gas Engineers are solicited to examine into the merits of this invention before erecting new or altering old retort-houses. It may be seen in action at the Alliance Gas Company's Works, Dublin, where its utility and economy will be clearly demonstrated. Although the saving in labour will be considerable, and quickly return any outlay of capital, there are other and important features strongly recommending its adoption at all gas-works, and which a gas engineer upon examination will at once appreciate.

The Directors of the Alliance Gas Company have kindly consented to give every facility to gentlemen desirous of seeing the invention in operation. Parties, therefore, about to visit Dublin will be so good as to send us their card, and we will furnish them with letters of introduction.

Drawings, &c., may be seen at our Office, and all details explained.

JOHN CHISHOLM, SON, & CO., 44, MARK LANE, E.C.

TO CORPORATIONS, GAS ENGINEERS, AND OTHERS.

HENRY ALDER,

GRANGE METER-WORKS, EDINBURGH,

Begs to intimate that he is the ORIGINAL MANUFACTURER of

DRY GAS-METERS IN CAST-IRON CASES.

The Meters are protected by Registration on the 17th of December, 1864, under the "Copyright of Designs Act."

They are much more durable, and at the same time more easily repaired than those in Tin Cases.

PRICE LIST AND TERMS ON APPLICATION.

Agent for Ireland—Mr. J. FURNESS, 3, Fownes Street, DUBLIN.

N. DEFRIES,

INVENTOR OF THE FIRST SUCCESSFUL

DRY GAS-METER.

210,000 IN USE.

WORKS:

DIANA PLACE, EUSTON ROAD, LONDON.

THE
PROPOSED WATER SUPPLY
FOR
THE METROPOLIS.

Just published, price 6d., by post 7d.,
A LECTURE
DELIVERED AT THE
ROYAL INSTITUTION OF GREAT BRITAIN,
On Friday, April 3, 1868,
BY DR. FRANKLAND, F.R.S.,
ON THE
Proposed Water Supply for the Metropolis.

Just Published, price 1s., by post 1s. 1d.,
EXPERIMENTS ON THE
FLOW OF GAS IN LONG PIPES,
MADE IN THE WORKS OF THE
PARIS GAS COMPANY,
By M. ARSON, Engineer-in-Chief of the Company,
Assisted by MM. MONARD AND HONORÉ.
Translated from the Memoirs of the Society of Civil Engineers of Paris,
By Dr. POLE, F.R.S., Mem. Inst. C.E.

London: WILLIAM B. KING, 11, Bolt Court, FLEET STREET, E.C.

OBSTRUCTION OF THE HIGHWAY BY LAYING GAS-MAINS.
Just published, price 2s., by post 2s. 1d.,
A REPORT
Of the Arguments in and the Judgment of the Court of Chancery in the case of the
CAMBRIDGE UNIVERSITY AND TOWN GASLIGHT COMPANY
v.
CAMBRIDGE CONSUMERS GAS COMPANY LIMITED, AND OTHERS.

London: WILLIAM B. KING, 11, Bolt Court, FLEET STREET, E.C.

RUTTER ON GAS LIGHTING.
Just Published, Fcap. 8vo., pp. 71, sewed, price 6d.,
ADVANTAGES of GAS in PRIVATE HOUSES.
A HANDY BOOK FOR GAS CONSUMERS:
TELLING THEM WHAT TO DO,
AND WHAT NOT TO DO.
BY J. O. N. RUTTER, F.R.A.S.
A new and revised edition, and the 196th thousand.
LONDON:
VIRTUE BROTHERS AND CO., 26, IVY LANE, PATERNOSTER ROW, and all Booksellers. 1866.
For distribution by gas companies, the price is £12 12s. per 1000 copies, and £1 10s. per 100.

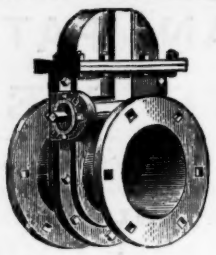
Crown 16mo, pp. 20,
GAS IN DWELLING-HOUSES:
ITS USES, CONVENIENCES, AND ECONOMY.
A revised and enlarged edition, and the 57th thousand,
Price—1000 copies, £3 10s.; 500 copies, £1 17s. 6d.. any smaller number at 8s. 6d. per 100.
When 1000 copies are ordered, the official title, scale of prices, and other information relating to the business of the Company, will be printed on the covers without extra charge.
All orders and inquiries for the last-mentioned edition to be addressed to the AUTHOR, Black Rock, BRIGHTON.

LAMBERTS
PATENT GALVANIZED IRON COCKS,
WITH WHITE METAL PLUGS.
TRADE (L) MARK.

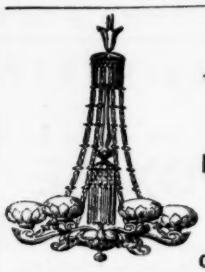
Warranted not to corrode or set fast, and are 50 per cent. cheaper than Brass Cocks.

THOMAS LAMBERT AND SONS,
Manufacturers,
SHORT STREET, LAMBETH, LONDON.

THOMAS CARR & SON,
MANUFACTURERS OF
FIRE-BRICKS, LUMPS, TILES, RETORTS,
&c. &c.
SCOTSWOOD FIRE-BRICK WORKS,
NEAR
BLAYDON-ON-TYNE.



REDUCED PRICES OF
B. DONKIN & CO.'S
IMPROVED GAS VALVES
WITH WROUGHT-IRON PINIONS
from 2 inches to 18 inches, price 9s. 6d. to 12s. per inch diameter
List of prices, with full dimensions of all sizes up to 36 inches, to be had on application.
These Valves are all proved on both sides to 30 lbs. on the square inch before leaving the works, and are always kept in stock.
Valves made with Outside Racks to order. Also, Screw Water-Valves with Gun-Metal Faces.
B. DONKIN & CO.,
ENGINEERS,
NEAR GRANGE ROAD, BERMONDSEY.



F. & C. OSLER,
45, OXFORD STREET, LONDON, W.
Manufactory & Show-Rooms: **BROAD STREET, BIRMINGHAM.**
ESTABLISHED 1807.
MANUFACTURERS OF CRYSTAL GLASS CHANDELIERS,
WALL LIGHTS, & LUSTRES FOR GAS & CANDLES.
TABLE GLASS OF ALL KINDS.
CHANDELIERS IN BRONZE & ORMOLU. MODERATOR LAMPS.

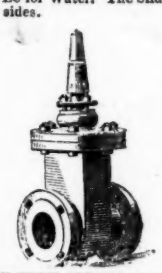
MATHER AND PLATT,
SALFORD IRON-WORKS, MANCHESTER,
Beg to call attention to their Revised List of Prices of VALVES, TAPS, &c. They also request the notice of Water Companies and Hydraulic Engineers to their IMPROVED SLUICE-VALVES for Water. The Slides have Gun-Metal Facings, are of wedge form, and when screwed down are tight on both sides.

GUN-METAL TAPS.

Bore.	Price.
¼ inch	£0 4 0
⅜ „	0 4 6
½ „	0 6 0
¾ „	0 8 6
1 „	0 11 0
1¼ „	0 14 0
1½ „	0 18 0
2 „	1 2 6

CAST-IRON STEAM-VALVES.
With Gun-Metal Valves & Seatings.

Bore.	Price.
2 inches	£1 2 6
3 „	1 17 6
4 „	2 15 0
5 „	3 15 0
6 „	4 17 0
7 „	6 0 0
8 „	7 5 0
9 „	8 15 0
10 „	10 10 0
11 „	12 5 0
12 „	14 0 0



CAST-IRON SLUICE-VALVES.
With Gun-Metal Facings.

Bore.	Price.
2 inches	£1 10 0
3 „	2 5 0
4 „	3 0 0
5 „	3 16 0
6 „	4 14 0
7 „	5 14 0
8 „	6 16 0
9 „	8 0 0
10 „	9 6 0
11 „	10 14 0
12 „	12 4 0

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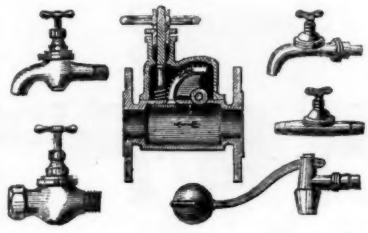

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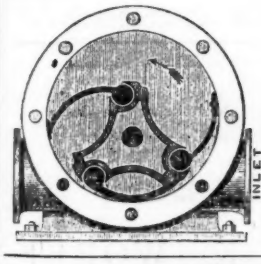

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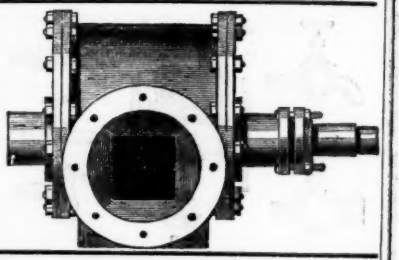

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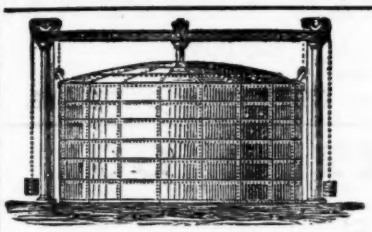

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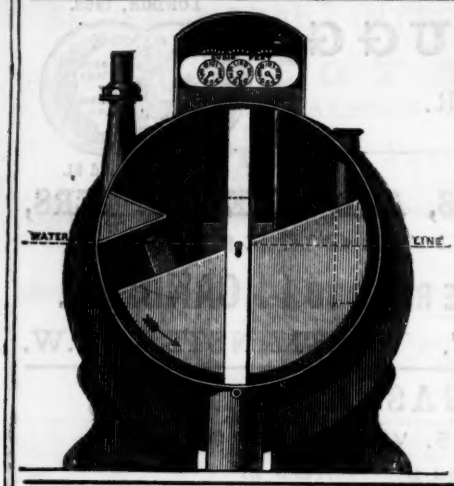

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